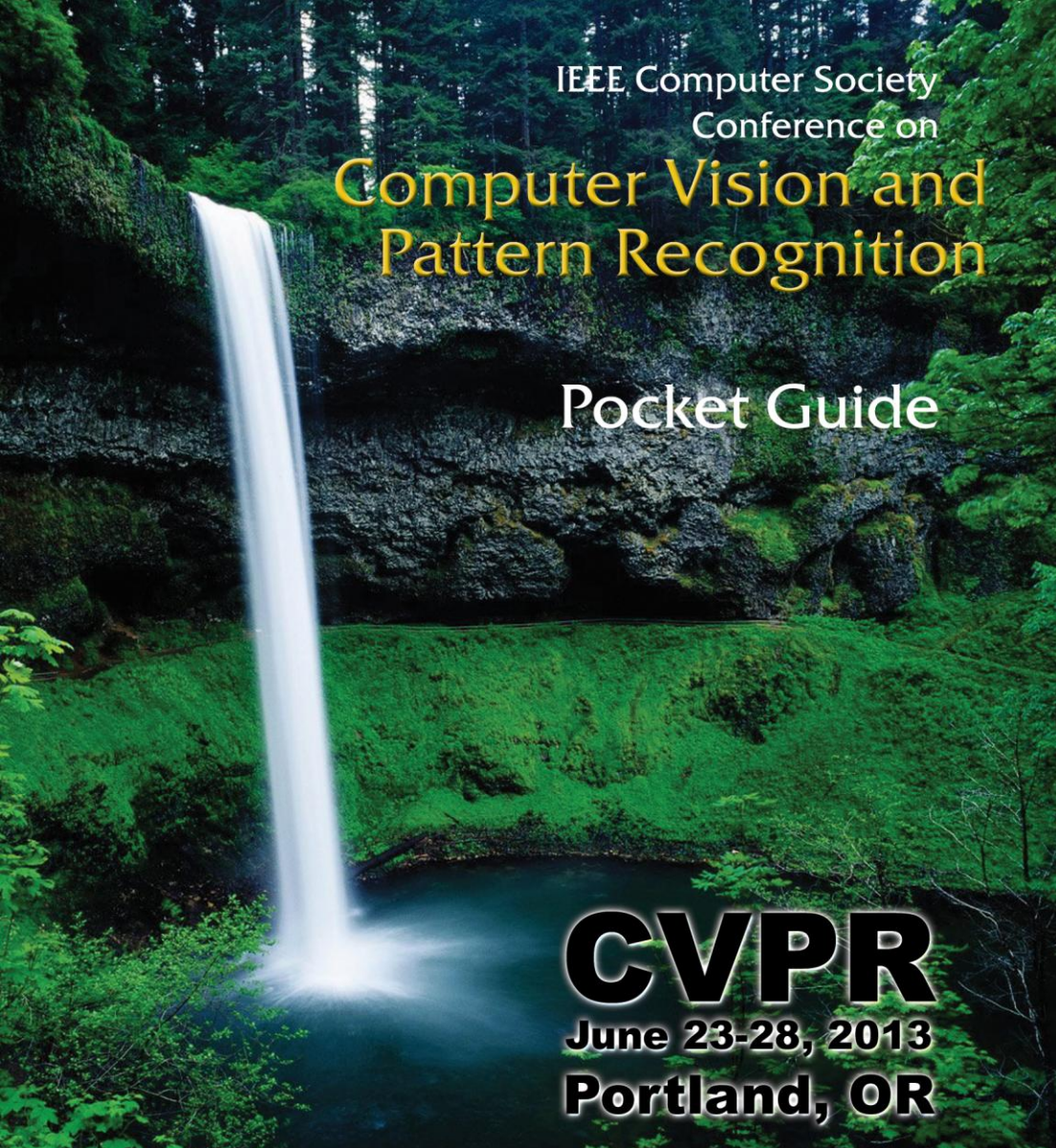
IEEE Computer Society
Conference on
Computer Vision and
Pattern Recognition
Pocket Guide
CVPR
June 23-28, 2013
Portland, OR

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Message from the General and Program Chairs

Welcome to Portland, Oregon and the 26th IEEE Conference on Computer Vision and Pattern Recognition (CVPR). In addition to the main three-day program of oral and poster presentations (in two parallel tracks), CVPR 2013 has a number of co-located events, including 22 workshops, 9 tutorials, and on-site demos and exhibits. In order to allow for one-minute spotlight presentation of each poster, oral presentations have been shortened to 15 minutes each, but oral presenters now optionally get to present a poster as well.

For this year's main conference, we received 1816 completed submissions to the conference, of which 1798 were fully reviewed. (The other papers were either rejected for technical reasons or withdrawn before review.) To select papers from these submissions, we invited 52 well-known vision researchers to act as Areas Chairs (ACs) and recruited an expert team of 932 reviewers from the broader computer vision community, with a maximum of 11 papers per reviewer and an average/median load of 5 papers.

Recognizing the crucial importance of qualified reviewers to the review and decision process, the initially compiled reviewer pool was first vetted by the Program Chairs through cross-checking a reviewer's recent publications in a number of major computer vision related conferences and journals, and then augmented by additional reviewers recommended by the ACs. We again used the CMT conference management service sponsored by Microsoft Research to manage the submission and selection of papers from beginning to end.

After the submission deadline, the Program Chairs distributed the papers to the ACs with help from the automated Toronto Paper Matching System (TPMS) developed by Charlin et al. [UAI 2011]. TPMS suggests matches between papers and reviewers (ACs, in our case) based on bag-of-words descriptors extracted from the PDF files of submitted manuscripts and representative publications by each potential reviewer; for CVPR 2013 we had a Program Coordination Chair who was in charge of the interface with TPMS. The ACs in turn used the results of a TPMS matching of papers to reviewers to help them determine the potential reviewers for each of their assigned papers, from which the CMT system automatically selected three non-conflicted reviewers per paper. Finally, extensive manual adjustments were made by the ACs and Program Chairs to achieve better matches between the papers and reviewers under the workload constraints. In summary, the critical task of matching papers to ACs and reviewers were made by the Program Chairs and ACs, with support from the CMT and TPMS software.

Reviewers were given five weeks to complete their reviews, at which time the ACs stepped back in to vet the reviews for quality (initiating discussions, where necessary) before they were released to the authors. After the author rebuttals were collected, the area chairs finished their pre-meeting work, i.e., consolidating the reviews and author rebuttals, initiating discussions for clarification, and making recommendations for decisions on papers. The Program Chairs and the ACs strove to ensure that every paper eligible for full review received at least three good quality reviews.

Every paper, its reviews and author rebuttal were looked at by at least two ACs. To further support a thorough review process, at the AC Meeting at the University of Southern California, the ACs were divided among six panels, with no conflicts between the ACs and papers associated with each panel. The Program Chairs served as the panel chairs and worked hard to maintain consistency between the panels. All decisions were made by at least two ACs working together and, as needed, by the whole panel. A consensus of the entire panel was sought on the most difficult cases. By the end of the meeting, the ACs were asked to produce detailed consolidation reports to justify all their decisions.

The Program Chairs and General Chairs did not submit any papers to CVPR 2013, allowing them to work without any direct conflicts throughout the review process. Additionally, the respective panel

chairs were excluded from any decisions associated with papers from their affiliated institutions. The double-blind nature of the CVPR review process was thus strictly maintained throughout the review process.

At the final program committee meeting, the ACs accepted 60 papers as orals (3.3% of submissions) and 412 papers as posters, giving an overall acceptance rate of 26.2% of submissions. There was no quota for the number of orals or posters.

The proceedings of CVPR 2013 are being published in USB drive form. All papers in the main conference and associated workshops will be indexed by the IEEE, and available through the IEEE Computer Society Digital Library and under IEEE Xplore.

While the most important aspect of CVPR 2013 is the high degree of care that the Program Chairs exercised in the paper selection process, the conference is also introducing two important organizational changes. This is the first CVPR where the winning bid was put together by the PAMI-TC Conference Committee, after no bids were received by the deadline. This new process, which is now part of the PAMI-TC's charter for CVPR, is designed to avoid the last minute scramble to put together a bid which has occasionally been seen in the past.

In addition, CVPR 2013 introduces a new sponsorship model, under another new provision of the charter. Until recently, CVPR was 100% sponsored by the IEEE Computer Society. Following CVPR 2011, some senior computer vision researchers created our own non-profit, with the self-explanatory name of "The Computer Vision Foundation" (CVF). After extensive discussions with the IEEE Computer Society, a mutually satisfactory co-sponsorship arrangement was created where CVF and IEEE serve as equal partners. The intent is to continue to provide CVPR with its longstanding IEEE affiliation, while also ensuring that the vision community's interests and concerns are given the appropriate degree of priority. The sponsorship model that CVPR 2013 is pioneering has been provisionally adopted by ICCV 2013, CVPR 2014 and CVPR 2015.

We wish to thank the other members of the Organizing Committee, the Area Chairs, Reviewers, Authors, and the CMT team for the immense amount of hard work and professionalism that has gone in to making CVPR 2013. Our thanks also go to the organizers of previous CVPRs for their helpful advice and support. We are grateful to the sponsors as well, and are happy to report that CVPR has set a record with over $120,000 of industrial support. Finally, we wish all the delegates a highly stimulating, informative, and enjoyable conference.

Gérard Medioni and Ramin Zabih
General Co-Chairs

Martial Hebert, Bill Freeman,
Greg Hager, and Richard Szeliski
Program Co-Chairs

Organizing Committee, Area Chairs, & Outstanding Reviewers

CVPR 2013 Organizing Committee

General Chairs:	Gérard Medioni Ramin Zabih	Finance Chairs:	Walter Scheirer Bryan Morse
Program Chairs:	Martial Hebert Bill Freeman Rick Szeliski Greg Hager	Publications Chairs:	Eric Mortensen Sanja Fidler
		Website Chair:	Ryan Farrell
		Corporate Relations Chair:	Fatih Porikli
TPMS Program Coord. Chair:	Bob Collins	Exhibits Chair:	Ginger Boult
Workshops Chair:	Ce Liu	Doctoral Consortium Chair:	Philippos Mordohai
Tutorials Chair:	Rahul Sukthankar	Student Activities Chair:	Octavia Camps
Demos Chair:	Jana Kosecka	Local Arrangements Chair:	Richard Campbell

CVPR 2013 Area Chairs

Sameer Agarwal	Vittorio Ferrari	Svetlana Lazebnik	Marc Pollefeys	Noah Snavely
Ronen Basri	David Forsyth	Erik Learned-Miller	Jean Ponce	Erik Sudderth
Alex Berg	Leo Grady	Kyoung Mu Lee	Deva Ramanan	Antonio Torralba
Tamara Berg	Kristen Grauman	Vincent Lepetit	Stefan Roth	Tinne Tuytelaars
Terry Boult	James Hays	Fei-Fei Li	Yoichi Sato	Andrea Vedaldi
Michael Brown	Derek Hoiem	Jitendra Malik	Silvio Savarese	René Vidal
Jason Corso	Katsushi Ikeuchi	Aleix Martinez	Bernt Schiele	Lihi Zelnik-Manor
Daniel Cremers	Hiroshi Ishikawa	Yasuyuki Matsushita	Cordelia Schmid	Todd Zickler
Irfan Essa	Pushmeet Kohli	Srinivasa	Steve Seitz	Larry Zitnick
Rob Fergus	Vladimir Kolmogorov	Narasimhan	Jamie Shotton	
Cornelia Fermüller	Ivan Laptev	Pietro Perona	Josef Sivic	

CVPR 2013 Outstanding Reviewers

We are pleased to recognize the following researchers as "Outstanding Reviewers for CVPR 2013". These reviewers were selected from over 1000 reviewers for their hard work in providing detailed reviews for the papers assigned to them. These reviewers were identified by one or more of the CVPR Area Chairs, who found their reviews of high quality. Review load was also accounted for in this decision (reviewers with low review loads were discounted).

Mykhaylo Andriluka	Paulo Gotardo	John MacCormick	Arun Ross	Roberto Tron
Roland Angst	Stefan Hamerling	Yasushi Makihara	Kate Saenko	Ranjith Unnikrishnan
Tal Arbel	Michael Havlena	Tim Marks	Benjamin Sapp	Jan van Gemert
Hossein Azizpour	Gang Hua	Stefano Mattoccia	Walter Scheirer	Nuno Vasconcelos
Rodrigo Benenson	Slobodan Ilic	Jan Neumann	Frank Schmidt	Ashok Veeraraghavan
Thomas Brox	Herve Jegou	Claudia Nieuwenhuis	Karen Simonyan	Jerod Weinman
Sunghyun Cho	Seon Joo Kim	Ko Nishino	Sudipta Sinha	Andreas Wendel
David Crandall	Kris Kitani	Jean-Marc Odobez	Michael Stark	Oliver Whyte
Dima Damen	Laurent Kneip	Sangmin Oh	Bjorn Stenger	David Wipf
Alession Del Bue	Iasonas Kokkinos	Srikumar Ramalingham	Rahul Sukthankar	John Wright
Olivier Duchenne	Dilip Krishnan	Michalis Raptis	Deqing Sun	Wei Xu
Paolo Favaro	Kiriakos Kutulakos	Emanuele Rodola	Graham Taylor	Luca Zapella
Pierre Georgel	Maxime Lhuillier	Mikel Rodriguez	Lorenzo Torresani	
Christopher Geyer	Feng Li	Romer Rosales	Alexander Toshev	

Sunday, June 23

0730–0830 Breakfast (Exhibit Hall B)

0730–1730 Registration (Pre-function A)

0730–1730 Computer Room (A102)

1200–1330 Lunch (Exhibit Hall B)

Mobile Vision

Organizers: Zhengyou Zhang
Marc Pollefeys
Gang Hua
Matthew Turk
Kari Pulli
Yun Fu

Location: B113-114

Schedule: Full Day

0830 Opening Remarks

0835 **Keynote Talk:** TBA, *Daniel Wagner (QualComm Research)*

S1: Mobile Visual Recognition and Search (0925–1015)

0925 Real-Time Mobile Food Recognition System, *Kawano Yoshiyuki, Keiji Yanai*

0950 Style Hunter: Fine-Grained Clothing Style Detection and Retrieval, *Wei Di, Catherine Wah, Anurag Bhardwaj, Robinson Piramuthu, Neel Sundaresan*

1015 Morning Break

S2: Mobile Motion Analysis (1045–1200)

1045 Stereo Camera Tracking for Mobile Devices, *Simone Gasparini, Pascal Bertolino*

1110 Towards Auto-Calibration of Smart Phones Using Orientation Sensors, *Philip Saponaro, Chandra Kambhamettu*

1135 Detection of Moving Objects with Non-Stationary Cameras in 5.8ms: Bringing Motion Detection to Your Mobile Device, *Kwang Yi, Kimin Yun, Soo Wan Kim, Hyung Jin Chang, Hawook Jeong, Jin Young Choi*

1200 Lunch (provided)

1345 **Keynote Talk:** *Blaise Agüera y Arcas (Microsoft)*

S3: Mobile Imaging and Detection (1435–1525)

1435 Mobile Video Capture of Multi-page Documents, *Jayant Kumar, Raja Bala, Hengzhou Ding, Phillip Emmett*

1500 Collision Detection for Visually Impaired from a Body-Mounted Camera, *Shrinivas Pundlik, Matteo Tomasi, Gang Luo*

1525 Afternoon Break

S4: Demos (1555–1635)

1555 Video Demo: An Egocentric Vision Based Assistive Co-robot, *Jingzhe Zhang, Lishuo Zhuang, Yameng Zhou, Yang Wang, Yan Meng, Gang Hua*

1605 Mobile Exergames - Burn Calories While Playing Games on a Smartphone, *Pradeep Buddharaju, Naga Siva Chandra Prasad Pamidi*

1615 A Mobile Vision System for Fast and Accurate Ellipse Detection, *Michele Fornaciari, Rita Cucchiara, Andrea Prati*

1625 Stabilization of Magnified Videos on a Mobile Device for Visually Impaired, *Zewen Li, Shrinivas Pundlik, Gang Luo*

1635 **Best Paper Award Announcement** (Sponsored by Microsoft)

Biometrics

Organizers: Bir Bhanu
Nalini K. Ratha
Venu Govindaraju
Ajay Kumar

Location: B117-119

Schedule: Full Day

S1: Face Recognition I (0830–0920)

0830 An Augmented Linear Discriminant Analysis Approach for Identifying Identical Twins with the Aid of Facial Asymmetry Features, *Felix Juefei-Xu, Marios Savvides*

0850 Continuous 3D Face Authentication using RGB-D Cameras, *Mauricio Pamplona Segundo, Sudeep Sarkar, Dmitry Goldgof, Luciano Silva, Olga Regina Pereira Bellon*

0910 Fixation and Saccade Based Face Recognition from Single Image per Person with Various Occlusions and Expressions, *Xingjie Wei, Chang-Tsun Li*

S2: Fingerprint Matching I (0920–1010)

0920 Issues in Rotational (Non-)invariance and Image Preprocessing, *Lalit Jain, Michael Wilber, Terry Boult*

0940 A New Metric for Latent Fingerprint Image Preprocessing, *Haiying Guan, Andrew M. Dienstfrey, Mary Frances Theofanos*

1000 Minutiae-Based Matching State Model for Combinations in Fingerprint Matching System, *Xi Cheng, Sergey Tulyakov, Venu Govindaraju*

1015 Morning Break

S3: Antispoofing Techniques (1040–1130)

1040 Anti-Spoofing in Action: Joint Operation with a Verification System, *Ivana Chingovska, André Anjos, Sebastien Marcel*

1100 Computationally Efficient Face Spoofing Detection with Motion Magnification, *Samarth Bharadwaj, Tejas Dhamecha, Mayank Vatsa, Richa Singh*

1120 Shape and Texture Based Countermeasure to Protect Face Recognition Systems Against Mask Attacks, *Neslihan Kose, Jean-Luc Dugelay*

S4: Ocular, Gait and Template Security (1130–1200)

1130 What is a 'Good' Periocular Region for Recognition?, *Jonathon M. Smereka, B.V.K. Vijaya Kumar*

1140 Histogram of Weighted Local Directions for Gait Recognition, *Sabesan Sivapalan, Daniel Chen, Simon Denman, Sridha Sridharan, Clinton Fookes*

1150 A New Protocol to Evaluate the Resistance of Template Update Systems Against Zero Effort Attacks, Romain Giot, *Christophe Rosenberger, Bernadette Dorizzi*

1200 Lunch (provided)

1330 **Invited Talk:** TBA, *Prem Natrajan (Raytheon-BBN)*

S5: Fingerprint Matching II (1430–1520)

1430 Self-Organizing Maps for Fingerprint Image Quality Assessment, *Martin Aastrup Olsen, Elham Tabassi, Anton Makarov, Christoph Busch*

1450 Quality Assessment for Fingerprints Collected by Smartphone Cameras, *Guoqiang Li, Bian Yang, Martin Aastrup Oslen, Christoph Busch*

1510 Texture Modeling for Synthetic Fingerprint Generation, *Peter Johnson, Fang Hua, Stephanie Schuckers*

1520 Afternoon Break

S6: Face Recognition II (1540–1630)

1540 Image Set-Based Face Recognition: A Local Multi-Keypoint Descriptor-Based Approach, *Na Liu, Meng Hui Lim, Pong Chi Yuen, Jian-Huang Lai*

1600 General Regression and Representation Model for Face Recognition, *Jianjun Qian, Jian Yang*

1620 Bacteria Foraging Fusion For Face Recognition Across Age Progression, *Daksha Yadav, Mayank Vatsa, Richa Singh, Massimo Tistarelli*

S7: Performance Improvement (1630–1720)

1630 Similarity Measure Using Local Phase Features and Its Application to Biometric Recognition, *Shoichiro Aoyama, Koichi Ito, Takafumi Aoki*

1650 Can Combining Demographics and Biometrics Improve De-duplication Performance?, *Himanshu Bhatt, Richa Singh, Mayank Vatsa*

1710 On Controlling Genuine Reject Rate in Multi-stage Biometric Verification, *Md. Shafaeat Hossain, Kiran Balagani, Vir Phoha*

Scene Understanding

Organizers: Jianxiong Xiao
Aditya Khosla
James Hays
Derek Hoiem

Location: A105-106

Schedule: Full Day

0830 Welcome

0835 **Invited Talk:** Scene Understanding by Inferring the "Dark Matters": Functionality, Physics, Causality and Mind, *Song-Chun Zhu (Univ. of California, Los Angeles)*

0905 **Invited Talk:** TBA, *Deva Ramanan (Univ. of California, Irvine)*

0935 **Invited Talk:** Using Common Sense in Computer Vision, *Larry Zitnick (Microsoft Research)*

1005 **Invited Talk:** TBA, *(Google)*

1015 Morning Break

1045 **Invited Talk:** Scene Understanding: Human and Computer Vision Perspective, *Aude Oliva (CSAIL, MIT)*

1115 Poster Spotlights

1200 Lunch break

1330 Poster session

1525 Afternoon break

1555 **Invited Talk:** TBA, *Yann LeCun (New York Univ.)*

1625 **Invited Talk:** TBA, *Ali Farhadi (Univ. of Washington)*

1655 **Invited Talk:** Scene Recognition at Facebook, *Lubomir Bourdev (Facebook)*

1705 **Invited Talk:** TBA, *Fei-Fei Li (Stanford Univ.)*

1735 **Invited Talk:** Understanding the 3D World from Images, *Silvio Savarese (Univ. of Michigan at Ann Arbor)*

Symmetry Detection from Real World Images — A Competition

Organizers: Yanxi Liu
Luc Van Gool
Seungkyu Lee
Jingchen Liu
Minwoo Park
Gang Zheng
George Slota
Zhaohui Wu

Location: A107-109

Schedule: Full Day

1045 Summary and History of the Competition, *Yanxi Liu*

1055 Summary of Submissions, *Jingchen Liu*

S2: Reflection (1105-1150)

1105 Recognition of Symmetry Structure by Use of Gestalt Algebra, *Eckart Michaelsen, David Muench, Michael Arens*

1120 Detection of Mirror-Symmetric Image Patches, *Viorica Patraucean, Rafael Grompone von Gioi, Maks Ovsjanikov*

1135 Multi-Scale Kernel Operators for Reflection and Rotation Symmetry, *Shripad Kondra, Alfredo Petrosino, Sara Iodice*

1200 Lunch (provided)

S2: Rotation or Translation (1330-1415)

1330 Multi-Scale Kernel Operators for Reflection and Rotation Symmetry, *Shripad Kondra, Alfredo Petrosino, Sara Iodice*

1345 Recognition of Symmetry Structure by Use of Gestalt Algebra, *Eckart Michaelsen, David Muench, Michael Arens*

1400 Translation Symmetry Detection: A Repetitive Pattern Analysis Approach, *Yunliang Cai, George Baciu*

1420 **Panel Discussion/Invited Talks:** Symmetry Detection Algorithm Evaluation: Should Human Perception be the Gold Standard for Evaluating Computer Vision Algorithms?, *Luc Van Gool*

Visual Analysis and Geo-Localization of Large-Scale Imagery

Organizers: Mubarak Shah
Luc Van Gool
Asaad Hakeem
Jan-Michael Frahm
Alexei Efros
Khurram Shafique
Omar Javed

Location: C120-122

Schedule: Full Day

0900 Welcome

0905 **Invited Talk:** TBA, *Noah Snavely (Cornell)*

0940 **Invited Talk:** TBA, *Marc Pollefeys (ETH)*

1015 Morning Break

1045 **Invited Talk:** TBA, *James Hays (Brown Univ.)*

1120 **Invited Talk:** TBA, *Cordelia Schmid (INRIA)*

1200 Lunch (provided)

1330 3D Point Cloud Reduction using Mixed-integer Quadratic Programming, *Yu Wang, Eriko Nurvitadhi, James C. Hoe, Yaser Sheikh, Mei Chen*

1350 User-Driven Geolocation of Untagged Desert Imagery Using Digital Elevation Models, *Eric Tzeng, Andrew Zhai, Matthew Clements, Raphael Townshend, Avideh Zakhor*

1410 **Invited Talk:** TBA, *Yang Song (Google Research)*

1445 **Invited Talk:** TBA, *Josef Sivic (INRIA)*

1525 Afternoon Break

1600 Panel Discussion

Action Similarity in Unconstrained Videos

Organizers: Tal Hassner
Eitan Sharon
Jianbo Shi

Location: C124

Schedule: Full Day

1045 Introduction and Welcome

1100 A Critical Review of Action Recognition Benchmarks, *Tal Hassner*

1130 **Invited Speaker:** TBA, *Ivan Laptev (INRIA Paris)*

1200 Lunch (provided)

1330 **Invited Speaker:** TBA, *Alvaro Soto (Catholic Univ. of Chile)*

1400 Formulating Action Recognition as a Ranking Problem, *Ethem F. Can, R. Manmatha*

1430 Spatio-Temporal Saliency for Action Similarity, *Gertjan J. Burghouts, Sebastiaan P. van den Broek, Raoul J.-M. ten Hove*

1500 Evaluating New Variants of Motion Interchange Patterns, *Yair Hanani, Noga Levy, Lior Wolf*

1530 Afternoon Break

1555 **Invited Speaker:** TBA, *Vittorio Ferrari (Univ. of Edinburgh)*

1625 Closing Remarks

V&L Net Workshop on Language for Vision

Organizers: Ted Briscoe
Darren Cosker
Frank Keller
William Smith

Location: C125-126

Schedule: Full Day

0900 Welcome

0915 **Keynote Talk:** TBA, *Fei-Fei Li (Stanford Univ.)*

1015 Morning Break

1045 Not Everybody's Special: Using Neighbors in Referring Expressions with Uncertain Attributes, *Amir Sadovnik, Andrew Gallagher, Tsuhan Chen*

1115 Cardiff Conversation Database (CCDb): A Database of Natural Dyadic Conversations, *Andrew J. Aubrey, David Marshall, Paul L. Rosin, Jason Vendeventer, Douglas W. Cunningham, Christian Wallraven*

1145 Automatic Signer Diarization – The Mover is the Signer Approach, *Binyam Gebre, Peter Wittenburg, Tom Heskes*

1215 Lunch (provided)

1330 Generating Image Descriptions Using Semantic Similarities in the Output Space, *Yashaswi Verma, Ankush Gupta, Prashanth Mannem, C.V. Jawahar*

1400 Sentence-Based Image Description with Scaleable, Explicit Models, *Micah Hodosh,Julia Hockenmaier*

1430 **Keynote Talk:** TBA, *Ray Mooney (Univ. of Texas at Austin)*

1530 Closing remarks

Large-Scale Visual Recognition

Organizers: Florent Perronnin
Zaid Harchaoui
Hervé Jégou

Time: 0830-1700 (Full Day)

Location: Oregon Ballroom 204

Description: This tutorial addresses Large-Scale Visual Recognition (LSVR), the problem of understanding visual content (e.g. photos or videos) on a large-scale. This is a topic which has received much attention in the computer vision community in the last few years: as larger datasets have become available, handling millions of images and thousands of label classes has become the norm rather than the exception. Since LSVR is a vast topic, we will mainly focus on two tasks: image retrieval and image classification.

The goals of this tutorial are three-fold:

- Provide the audience with the "tools" to process such large datasets.
- Show the convergence between large-scale retrieval and large-scale classification, two problems which have been traditionally addressed separately.
- Show that LSVR does not necessarily require massive computational resources (although such resources can help, of course...)

Visual Learning with Weak Supervision

Organizers: Matthew Blaschko
M. Pawan Kumar
Ben Taskar

Time: 0830-1700 (Full Day)

Location: B110-112

Description: Structured output prediction refers to the task of learning to predict elements of a complex interdependent output space that correspond to a given input. In recent years, it has made a tremendous impact on computer vision by providing an elegant formulation for systems that perform object detection, semantic segmentation, pose estimation and various other important visual tasks. In order to train such systems, it is typical to require full annotation of the output to be predicted, such as bounding boxes for object detection, pixel level labeling for segmentation or stick-figures for pose estimation. However, the provision of full, detailed annotation is an expensive and restrictive requirement.

This tutorial covers learning with weak supervision, that is, learning to predict structured outputs when annotations are not to the same level of detail as the outputs to be predicted, and when annotations are heterogeneous (for example, as a result of merging two datasets with different annotation formats). Highlights of the tutorial include (i) an overview of supervised structured output prediction in computer vision; (ii) current challenges that may be addressed with weak annotations; (iii) an introduction to state of the art methods for learning with weak annotations; and (iv) demos with downloadable code for all the topics covered in the tutorial.

Towards Solving Real-World Vision Problems with RGB-D Cameras

Organizer: Xiaofeng Ren
Pushmeet Kohli
Jürgen Gall

Time: 0830-1700 (Full Day)

Location: B115-116

Description: RGB-D depth cameras have the potential to become a key component for solving real-world problems. With the drop of sensor prices, they have become a commercial success and their popularity in the research community increased. Although many publications appeared in the last years, they are spread over a variety of conferences and workshops on computer vision, robotics, human-computer interaction, and augmented reality. This makes it difficult to assess the impact of RGB-D depth cameras and the progress in this field. The proposed short course intends to discuss the basics, underlying principles and cutting-edge results of a comprehensive list of topics in RGB-D perception:

- RGB-D cameras and APIs
- RGB-D features and object recognition
- Object detection and scene understanding
- Pose estimation and action recognition
- Face analysis
- 3D modeling

Foundations of Spatial Spectroscopy

Organizer: James Coggins

Time: 0830-1200 (Half Day-Morning)

Location: C123

Description: Spatial Spectroscopy is a methodology for defining, representing, analyzing, and solving computer vision problems that unifies multiscale analysis, differential geometry, and statistical pattern recognition. This course introduces the foundations of spatial spectroscopy, specifically the historical foundations, the mathematical foundations, the engineering foundations, and the computational foundations. The methodology begins by defining the spatial analog of electromagnetic spectroscopy, showing the central role of the Taylor Series in the underlying mathematics, shows how Fourier analysis can be used to understand both the power of spatial spectroscopy and how conventional methods fail to exploit that power, and the computational simplifications that make Spatial Spectroscopy practical for use in solving real computer vision problems.

Easy Computer Vision

Organizer: Mathias Kölsch

Time: 1330-1700 (Half Day-Afternoon)

Location: C123

Description: With Easy Computer Vision, you can harness the power of modern computer vision algorithms with minimal technical knowledge. As a vision researcher, you can tap into labeled data sets with one easy interface, you can compare your algorithm against other, pre-implemented, pre-built algorithms. Essentially, this tutorial will introduce you to a new, powerful way to "do computer vision."

This tutorial is aimed at computer vision researchers and application developers. It teaches "easy computer vision," a collection of data structures, tools, algorithms and algorithm libraries, as well as documentation and guides. Easy is meant to be just that: easier first steps in vision, easier research, easier dissemination, easier evaluation, easier comparison.

Monday, June 24

0730–0830 Breakfast (Exhibit Hall B)

0730–1730 Registration (Pre-function A)

0730–1730 Computer Room (A102)

1200–1330 Lunch (Exhibit Hall B)

Perception Beyond the Visible Spectrum

Organizers: Riad I. Hammoud
Fatih Porikli
Behzad Kamgar-Parsi
Guoliang Fan
Firooz Sadjadi
Guna Seetharaman
Aly Farag

Location: A105

Schedule: Full Day

0830 Welcome Message

0840 **Keynote Talk:** Multi-frame Data Association with Higher-Order Cost Functions, *Robert T. Collins (The Pennsylvania State Univ.)*

0930 Tri-modal Person Re-identification with RGB, Depth and Thermal Features, *Andreas Møgelmose, Chris Bahnsen, Thomas B. Moeslund, Albert Clapés, Sergio Escalera*

0950 Fast and Accurate Registration of Visible and Infrared Videos, *Socheat Sonn, Guillaume-Alexandre Bilodeau, Philippe Galinier*

1010 A Multi-Sensor Fusion Framework in 3-D, *Vishal Jain, Andrew Miller, Joseph Mundy*

1030 Morning Break

1050 Overhead-Based Image and Video Geo-Localization Framework, *Riad I.Hammoud, Scott Kuzdeba, Brian Berard, Victor Tom, Richard Ivey, Renu Bostwick, Jason HandUber, Lori Vinciguerra, Nathan Shidman, Byron Smiley*

1110 A Comparative Evaluation of Spectral Reflectance Representations for Spectrum Reconstruction, Interpolation and Classification, *Cong Phuoc Huynh, Antonio Robles-Kelly*

1130 A Fully Automatic Method to Extract the Heart Rate from Thermal Video, *Travis R. Gault, Aly A. Farag*

1200 Lunch (provided)

1330 One-Class Multiple-Look Fusion: A Comparison of Different Approaches with Examples from Infrared Video, *Mark Koch*

1350 The CASIA NIR-VIS 2.0 Face Database, *Stan Li, Dong Yi, Zhen Lei, Shengcai Liao*

1410 A Non-invasive Method for Measuring Blood Flow Rate in Superficial Veins from a Single Thermal Image, *Ali Mahmoud, Ahmed EL-Barkouky, Heba Farag, James Graham, Aly Farag*

1430 X-ray Testing by Computer Vision, *Domingo Mery*

1450 Automated X-ray Object Recognition Using an Efficient Search Algorithm in Multiple Views, *Domingo Mery, Vladimir Riffo, Irene Zuccar, Christian Pieringer*

1510 Shadow Segmentation in SAS and SAR Using Bayesian Elastic Contours, *Darshan Bryner, Anuj Srivastava*

1530 Afternoon Break

1555 Audio-Visual Feature Fusion for Vehicles Classification in a Surveillance System, *Tao Wang, Zhigang Zhu, Riad Hammoud*

1615 Applications of Human Motion Tracking: Smart Lighting Control, *Sung Yong Chun, Chan-Su Lee*

1635 **Keynote Talk:** Visual Material Recognition, *Ko Nishino (Drexel Univ.)*

1715 Closing Remarks

Big Data Computer Vision

Organizers: Chandra Kambhamettu
Dimitris N. Metaxas

Location: Oregon Ballroom 204

Schedule: Full Day

0830 Opening Remarks

0835 **Invited Talk:** TBA, *Harry Shum (Microsoft Research)*

0915 Large Scale Medical Image Search via Unsupervised PCA Hashing, *Xiang Yu, Shaoting Zhang, Bo Liu, Lin Zhong, Dimitris Metaxas*

0945 Big Data Scalability Issues in WAAS, *Jan Prokaj, Xuemei Zhao, Jongmoo Choi, Gerard Medioni*

1015 Morning Break

1045 **Invited Talk:** TBA, *Shih-Fu Chang (Columbia Univ.)*

1125 Iterative Reconstruction of Large Scenes Using Heterogeneous Feature Tracking, *Rohith MV, Stephen Rhein, Guoyu Lu, Scott Sorensen, Andrew R. Mahoney, Hajo Eicken, G. Carleton Ray, Chandra Kambhamettu*

1200 Lunch (provided)

1330 Learning Regularized, Query-Dependent Bilinear Similarities for Large Scale Image Retrieval, *Zhanghui Kuang, Jian Sun, Kenneth Wong*

1400 Lost but Found? Harnessing the Internet for Photometric Completion, *Pratyush Sahay, Rajagopalan Ambasamudram*

1430 Duplicate Discovery on 2 Billion Internet Images, *Xin-Jing Wang, Lei Zhang, Ce Liu*

1500 Efficient Category Mining by Leveraging Instance Retrieval, *Abhinav Goel, Mayank Juneja, C.V. Jawahar*

1530 Afternoon Break

1555 Peak Valley Edge Patterns: A New Descriptor for Biomedical Image Indexing and Retrieval, *Subrahmanyam Murala, Q.M. Jonathan Wu*

1625 Decoupling Sparse Coding with Fusion of Fisher Vector and Scalable SVMs for Large-scale Visual Recognition, *Zhengping Ji*

1655 Exploiting Unlabeled Ages for Aging Pattern Analysis on A Large Database, *Guodong Guo, Chao Zhang*

1725 Closing Remarks & Round-Table Discussion

Human Activity Understanding from 3D Data

Organizers: Wanqing Li
Zicheng Liu
Junsong Yuan
Adrian Hilton
Philip Ogunbona
Zhengyou Zhang

Location: B113-114

Schedule: Full Day

0845 **Keynote Talk:** Flexiview: Generating 3D Views of Human Actions from Arbitrary Viewpoints Using Multiple Video Streams and 3D data, *Rama Chellappa (Univ. of Maryland)*

0945 Joint Angles Similiarities and HOG^2 for Action Recognition, *Eshed Ohn-Bar, Mohan M. Trivedi*

1000 Bio-inspired Dynamic 3D Discriminative Skeletal Features for Human Action Recognition, *Rizwan Chaudhry, Ferda Ofli, Gregorij Kurillo, Rene Vidal, Ruzena Bajcsy*

1015 Morning Break

1045 Recognizing Actions from Depth Cameras as Weakly Aligned Multi-Part Bag-of-Poses, *Lorenzo Seidenari, Vincenzo Varano, Stefano Berretti, Alberto Del Bimbo, Pietro Pala*

1100 Fusing Spatiotemporal Features and Joints for 3D Action Recognition, *Yu Zhu, Wenbin Chen, Guodong Guo*

1115 Grassmannian Sparse Representations and Motion Depth Surfaces for 3D Action Recognition, *Sherif Azary, Andreas Savakis*

1130 Edge Enhanced Depth Motion Map for Dynamic Hand Gesture Recognition, *Chenyang Zhang, Yingli Tian*

1145 Similarity Measure between Two Gestures using Triplets, *Ravikiran Krishnan, Sudeep Sarkar*

1200 Lunch (provided)

1340 **Keynote Talk:** Human Activity Understanding, *Mubarak Shah (Univ. of Central Florida)*

1440 Attractor-Shape for Dynamical Analysis of Human Movement: Applications in Stroke Rehabilitation and Action Recognition, *Vinay Venkataraman, Pavan Turaga, Nicole Lehrer, Michael Baran, Thanassis Rikakis, Steven L. Wolf*

1455 Home Monitoring Musculo-Skeletal Disorders with a Single 3D Sensor, *Ruizhe Wang, Gérard Medioni, Carolee Winstein, Cesar Blanco*

1510 Reliable Human Detection and Tracking in Top-View Depth Images, *Michael Rauter*

1530 Afternoon Break

1555 A Novel Human Detection Approach Based on Depth Map via Kinect, *Yujie Shen, Zhonghua Hao, Pengfei Wang, Shiwei Ma, Wanquan Liu*

1610 Part Segmentation of Visual Hull for 3D Human Pose Estimation, *Atul Kanaujia, Nicholas Kittens, Narayanan Ramanathan*

1625 Content Based 3D Human Document Retrieval Using Latent Semantic Mapping, *Yohan Jin, Balakrishnan Prabhakaran*

1640 A Compensation Method of Motion Features with Regression for Deficient Depth Image, *Ryo Yumbia, Yoshiki Agata, Hironobu Fujiyoshi*

Structured Prediction - Tractability, Learning and Inference

Organizers: Sebastian Nowozin
Peter Gehler

Location: B115-116

Schedule: Full Day

0900 Opening Remarks

0905 **Invited Talk:** Designing Loss Functions for Structured Prediction, *Danny Tarlow (Microsoft Research)*

0955 Collective Activity Detection Using Hinge-Loss Markov Random Fields, *Ben London, Sameh Khamis, Stephen H. Bach, Bert Huang, Lise Getoor, Larry S. Davis*

1020 Morning Break

1045 **Invited Talk:** Reducing CRF Training to a Series of (Possibly Non-linear) Logistic Regression Problems, *Justin Domke (NICTA)*

1135 Modeling Instance Appearance for Recognition - Can We Do Better Than EM?, *Andrew Chou, Huayan Wang, Michael Stark, Daphne Koller*

1200 Lunch (provided)

1400 **Invited Talk:** Contour Completion with Fields-of-Patterns, *Pedro Felzenswalb (Brown Univ.)*

1450 Accelerated Training of Linear Object Detectors, *Charles Dubout, François Fleuret*

1515 Afternoon Break

1555 Hierarchical Feature Pooling with Structure Learning: A New Method for Pedestrian Detection, *Xiaoyu Wang*

1620 **Invited Talk:** Efficient Learning and Inference for Holistic Scene Understanding, *Raquel Urtasun (TTI Chicago)*

1710 Closing Remarks

Embedded Vision

Organizers: Margrit Gelautz
Branislav Kisacanin
Fridtjof Stein
Goksel Dedeoglu

Location: B110-112

Schedule: Full Day

0830 Welcome Message

S1: Keynote (0835–0930)

0835 **Keynote:** Embedded Vision and Hearing: Bio-mimetic Approaches, *Richard F. Lyon (Google)*

S2: Embedded Low Level Vision (0930–1015)

0930 GPU-SHOT: Parallel Optimization for Real-Time 3D Local Description, *Daniele Palossi, Federico Tombari, Samuele Salti, Martino Ruggiero, Luigi Di Stefano, Luca Benini*

0950 Scalable Frame to Block-Based Automatic Convertor for Efficient Embedded Vision Processing, *Senthil Yogamani, BH Pawan Prasad, Rajesh Narasimha*

1015 Morning Break

S3: System Analysis (1045–1200)

1045 **Invited Talk:** EVE: A Flexible Co-Processor for Embedded Vision Applications, *Jagadeesh Sankaran (Texas Instruments)*

1120 An Embedded Vision Services Framework for Heterogeneous Accelerators, *Eduardo Gudis, Pullan Lu, David Berends, Kevin Kaighn, Gooitzen Van der Wal, Gregory Buchanan, Sek Chai, Michael Piacentino*

1140 Vision-Based Lane Analysis: Exploration of Issues and Approaches for Embedded Realization, *Ravi Kumar Satzoda, Mohan Trivedi*

1200 Lunch (provided)

S4: Applications I - Detection of Humans (1330–1530)

1330 **Invited Talk:** Next Generation FPGAs and SOCs – How Embedded Systems Can Profit, *Felix Eberli (Supercomputing Systems AG)*

1400 GPU-Accelerated Human Detection Using Fast Directional Chamfer Matching, *David Schreiber, Csaba Beleznai, Michael Rauter*

1420 Pedestrian Detection at Warp Speed: Exceeding 500 Detections per Second, *Floris De Smedt, Kristof Van Beeck, Tinne Tuytelaars, Toon Goedemé*

1440 FPGA-Based Real-Time Pedestrian Detection on High-Resolution Images, *Michael Hahnle, Frerk Saxen, Matthias Hisung, Ulrich Brunsmann, Konrad Doll*

1500 **Invited Talk:** Development and Deployment of Embedded Vision in Industry: An Update, *Jeff Bier (BDTI and Embedded Vision Alliance)*

1530 Afternoon Break

S5: Panel Session (1600–1800)

1600 **Invited Talk:** Stereo Vision Algorithms for FPGAs, *Stefano Mattoccia (Univ. of Bologna)*

1630 Efficient GPU-Based Graph Cuts for Stereo Matching, *Young-kyu Choi, In Kyu Park*

1650 Ground Truth Evaluation for Event-Based Silicon Retina Stereo Data, *Juergen Kogler, Florian Eibensteiner, Martin Humenberger, Margrit Gelautz, Josef Sharinger*

1710 **Invited Talk:** Consumer Robotics: A Platform for Embedding Computer Vision in Everyday Life, *Mario Munich (iRobot)*

1740 **Paper Award & Closing Remarks**

Vision Industry and Entrepreneur Workshop

Organizers: Sek Chai
Boaz Super

Location: C124 (Posters in C125-126)

Schedule: Full Day

0800 Welcome

S1: Distinguished Speakers (0810–1015)

0810 **Invited Talk:** Research and Development at Microsoft, *Richard Szeliski (Microsoft Research)*

0850 **Invited Talk:** From Human Vision to Computer Vision: Innovations and Inventions, *Khaled El-Maleh (Qualcomm)*

0930 **Invited Talk:** A Professor's View on University Patents: Filing, Commercialization, Prosecution, and Litigation, *Shmuel Peleg (Hebrew Univ. of Jerusalem)*

1015 Morning Break

S2: Session 2 (1040–1200)

1040 **Industry Session Spotlights:** Moderator: *Himanshu Arora (A9.com)*

1100 **Tutorial Session:** Preparing to Pitch: Creating the Vision for your Vision, *Terrance Boult (UCCS, Securics)*

1200 Lunch (provided)

S3: Industry Session: Demos, Posters, Recruiting (1300–1445)

1. The Kooaba Recognition Platform and its Applications, *Till Quack, Tobias Jaeggli*
2. Technologies for Vision, Augmented Reality and Natural User Interface, *Aamer Zaheer, Ali Rehan, Murtaza Taj, Abdul Rehman*
3. SRI International Vision Technology, *Sek Chai*
4. Computer Vision for Enterprise and Public Safety at Motorola Solutions, *Ankur Patel*
5. Euvision Technologies: Mining for Images, *Koen van de Sande, Cees Snoek, Harro Stokman*
6. Video Analytics at United Technologies Research Center, *Alan Finn*
7. RigIT: an Autonomous Rigging Application, *Jeffrey Holcomb*
8. Computer Vision at Eyenuk: Image Analysis for Your Health and Your Photos, *Kaushal Solanki, Chaithanya Ramachandra, Nitin Solanki*
9. Visual Search Technologies at A9, *Arnab Dhua, Himanshu Arora*
10. Large Scale Face Recognition in Online Videos, Carolina Galleguillos, *Hardik Shah, Robert Impollonia*
11. Embedded Vision Alliance: An Engineering Community at the Intersection of Computer Vision and Embedded Systems, *Jeremy Giddings, Jeff Bier*
12. Collaborative Computer Vision R&D at Kitware, *Brad Davis, Sangmin Oh, Matt Turek, Amitha Perera, Anthony Hoogs*
13. Computer Vision Applications at Amazon, *Jim Curlander, Danny Guan*
14. Computer Vision, Statistics, Simulation and Airport Problems, *Roman Pflugfelder, Norbert Braendle*

S4: Distinguished Speakers (1445–1715)

1445 **Invited Talk:** Taking Vision from Expert to Everyday, *Michael Geertsen (DARPA)*

1535 Afternoon Break

1555 **Invited Talk:** Productizing a Computer Vision Technology, *Victor Eruhimov (Itseez)*

1635 **Invited Talk:** Computer Vision Solutions for the eCommerce World, *Gautam Bhargava (A9.com)*

S5: Panel Session (1715–1800)

1715 **Panel:** Computer Vision Industry, Entrepreneurship, and Community, Moderator: *Boaz Super (Motorola Solutions)*

1750 **Beyond VIEW 2013:** *Sek Chai (SRI International) and Boaz Super (Motorola Solutions)*

Behaviour Analysis in Games and Modern Sensing

Organizers: Georgios Tzimiropoulos
Vasileios Argyriou
Jesus Martinez del Rincon
Oriel Bergig
Stefanos Zafeiriou
Anton Nijholt

Location: C120-122

Schedule: Half Day - Morning

S1: Invited & Oral Presentations (0900-1015)

0900 **Invited Talk:** TBA, *Dimitris Metaxas (Rutgers Univ.)*

0955 "You're it!": Role Identification using Pairwise Interactions in Tag Games, *Alejandro Moreno, Ronald Poppe*

1015 Morning Break

S2: Oral Presentations (1045-1205)

1045 Affective Gaming: A Comprehensive Survey, *Irene Kotsia, Stefanos Zafeiriou, Spiros Fotopoulos*

1105 Action Recognition with Temporal Relationships, *Guangchun Cheng, Yiwen Wan, Wasana Santiteerakul, Shijun Tang, Bill P Buckles*

1125 THETIS: Three Dimensional Tennis Shots - A Human Action Dataset, *Sofia Gourgari, Georgios Goudelis, Konstantinos Karpouzis, Stefanos Kollias*

1145 3D Interaction Environment for Free View Point TV and Games Using Multiple Tablet Computers, *Rob Dupre, Raul A. Herrera Acuna, Vasileios Argyriou, Sergio Velastin*

Intel Special Session: Enabling Computer Vision Breakthroughs by Removing Computational Bottlenecks

Organizer: Intel Corporation

Time: 1330-1700 (Half Day-Afternoon)

Location: A103-104

Description: Intel invites you to participate in an open session on how future vision algorithms can best be accelerated in future processor designs. This session will consist of a series of short presentations by leaders in vision followed by a debate on what processor support will best enable vision system breakthroughs. Leadership from Intel's processor design teams will be present to learn from your insights and to inject processor design expertise.

A Crash Course on Visual Saliency Modeling: Behavioral Findings and Computational Models

Organizers: Ali Borji
Simone Frintrop
Laurent Itti

Time: 0830-1700 (Full Day)

Location: A106

Description: Over the last two decades, the fields of visual attention and visual saliency have attracted a lot of interest in computer vision. CVPR has been one of the main venues for publishing results in this domain. There exists a vast literature in visual saliency from both biological/behavioral perspectives to computational attention modeling. Our main aims in this tutorial are reviewing bold advances in the field and bringing together new researchers and prominent figures. We will provide the theoretical background of saliency concepts and models, as well as illustrating successful applications (in some cases, outperforming the state-of-the-art) of saliency models. We are expecting a broad audience, from experts in the field to undergraduate and graduate students interested in enlarging their understanding and discovering open problems and new directions. Our tutorial is one of the first attempts to reviewing/criticizing saliency literature in a vision conference.

We will cover the following topics in this course based on the agenda presented in a recent comprehensive review by the organizers (Borji & Itti, PAMI 2013:

- Fundamental concepts and theories of visual attention from a behavioral perspective
- Introduction to visual saliency modeling and review of models based on the Koch & Ullman's computational architecture.
- Saliency models based on Information theory and Bayesian concepts
- Spectral analysis saliency models
- Graphical models
- Pattern classification models
- Applications of saliency modeling
- Spatio-temporal saliency modeling
- Model comparison, challenges, and open problems for future

Making Multiple Diverse Predictions From Probablistic Structured Models

Organizers: Dhruv Batra
Alex Kulesza
Deva Ramanan

Time: 0830-1700 (Full Day)

Location: A107-109

Description: Computer vision systems must deal with a tremendous amount of uncertainty, from occlusion to varying appearance, lighting, and pose. Probabilistic models provide a principled framework for dealing with this uncertainty and for converting evidence from multiple noisy sources into a posterior belief about the world. Typically, an intelligent system will then use this belief to predict the most probable or maximum a-posteriori (MAP) hypothesis.

For a variety of reasons, a single prediction can be inadequate. If the model is misspecified, the training data are suboptimal, or complex and intractable learning objectives lead to significant optimization error, then the MAP solution may be unreliable. We might prefer to hedge our bets by making *multiple predictions* and then re-ranking or combining them to obtain a single answer.

This tutorial will cover models and techniques for generating multiple diverse predictions from structured probabilistic models:

- Diverse M-Best Solutions in MRFs
- Multiple Solutions via Sampling
- Determinantal Point Processes (DPPs)

3D Reconstruction of "Invisibles"

Organizer: Jingyi Yu

Time: 1330-1700 (Half Day-Afternoon)

Location: C123

Description: The problem of modeling and reconstructing the "invisibles", e.g., specular or transparent objects such as 3D fluid wavefront and gas flows, has attracted much attention in recent years. Successful solutions can benefit numerous applications in oceanology, fluid mechanism and computer graphics as well as lead to new insights towards shape reconstruction. The problem, however, is inherently difficult. First, specular objects do not have their own image. They instead borrow appearance from nearby diffuse objects. Second, modeling the light paths is non-trivial since refractions or reflections non-linearly alter their directions. Finally, dynamic specular or transparent objects often exhibit spatially and temporally varying distortions that are hard to correct. In this tutorial, we discuss a broad range of classical solutions based on correspondence matching as well as an emerging class of approaches based on computational cameras/projectors.

Attributes

Organizers: Devi Parikh
Ali Farhadi
Kristen Grauman
Tamara Berg
Abhinav Gupta

Time: 0830-1700 (Full Day)

Location: B117-119

Description: Attributes are mid-level semantic visual concepts such as "furry", "natural", "tall", etc. that are shareable across categories. In the past few years, they have been used extensively in a variety of visual understanding tasks. This tutorial will try to define what attributes are, and explain how they differ from other visual concepts like scenes, objects or parts. It will also provide a comprehensive overview of the various ways in which attributes have been leveraged in literature. A clear and structured exposure to attributes within the context of related computer vision topics will be very valuable to graduate students interested in conducting research in visual recognition in general and/or in the use of attributes in particular. More senior researchers in different areas of computer vision interested in a "crash course" on the various efforts in literature — on this now quite popular topic — will also find this tutorial beneficial.

Tuesday, June 25

0730–0830 Breakfast (Exhibit Hall B)

0730–1730 Registration (Pre-function A)

0730–1730 Computer Room (A102)

0820–0830 Welcome by the General Chairs
(Oregon Ballrooms 201-202, 203-204)

0830–0945 Oral 1A: 3D Imaging & Reasoning
(Oregon Ballroom 201-202)

Chairs : Derek Hoiem *(UIUC)*
Steve Seitz *(Univ. of Washington)*

Format (13 min. for presentation + 2 min. for questions)

1. 3D-Based Reasoning with Blocks, Support, and Stability, *Zhaoyin Jia, Andrew Gallagher, Ashutosh Saxena, Tsuhan Chen*
2. Physically Plausible 3D Scene Tracking: The Single Actor Hypothesis, *Nikolaos Kyriazis, Antonis Argyros*
3. Intrinsic Scene Properties from a Single RGB-D Image, *Jonathan T. Barron, Jitendra Malik*
4. Depth Acquisition from Density Modulated Binary Patterns, *Zhe Yang, Zhiwei Xiong, Yueyi Zhang, Jiao Wang, Feng Wu*
5. Understanding Indoor Scenes Using 3D Geometric Phrases, *Wongun Choi, Yu-Wei Chao, Caroline Pantofaru, Silvio Savarese*

0830–0945 Oral 1B: Statistics & Learning
(Oregon Ballroom 203-204)

Chairs : Ben Taskar *(Univ. of Washington)*
Rene Vidal *(Johns Hopkins Univ.)*

Format (13 min. for presentation + 2 min. for questions)

1. Rolling Riemannian Manifolds to Solve the Multi-class Classification Problem, *Rui Caseiro, Pedro Martins, João F. Henriques, Fátima Silva Leite, Jorge Batista*
2. Exploring Compositional High Order Pattern Potentials for Structured Output Learning, *Yujia Li, Daniel Tarlow, Richard Zemel*
3. Discrete MRF Inference of Marginal Densities for Non-uniformly Discretized Variable Space, *Masaki Saito, Takayuki Okatani, Koichiro Deguchi*
4. GeoF: Geodesic Forests for Learning Coupled Predictors, *Peter Kontschieder, Pushmeet Kohli, Jamie Shotton, Antonio Criminisi*
5. Kernel Methods on the Riemannian Manifold of Symmetric Positive Definite Matrices, *Sadeep Jayasumana, Richard Hartley, Mathieu Salzmann, Hongdong Li, Mehrtash Harandi*

0945–1015 Spotlight 1A: 3D & Stereo
(Oregon Ballroom 201-202)

Chairs : Cornelia Fermüller *(Univ. of Maryland)*
Claudia Nieuwenhuis *(Technical Univ. of Munich)*

Format (1 min. poster spotlight)

1. Manhattan Scene Understanding via XSlit Imaging, *Jinwei Ye, Yu Ji, Jingyi Yu*
2. Discovering the Structure of a Planar Mirror System from Multiple Observations of a Single Point, *Ilya Reshetouski, Alkhazur Manakov, Ayush Bhandari, Ramesh Raskar, Hans-Peter Seidel, Ivo Ihrke*
3. Joint 3D Scene Reconstruction and Class Segmentation, *Christian Häne, Christopher Zach, Andrea Cohen, Roland Angst, Marc Pollefeys*
4. Tensor-Based Human Body Modeling, *Yinpeng Chen, Zicheng Liu, Zhengyou Zhang*
5. City-Scale Change Detection in Cadastral 3D Models Using Images, *Aparna Taneja, Luca Ballan, Marc Pollefeys*
6. Improving the Visual Comprehension of Point Sets, *Sagi Katz, Ayellet Tal*
7. Mirror Surface Reconstruction from a Single Image, *Miaomiao Liu, Richard Hartley, Mathieu Salzmann*
8. Detecting Changes in 3D Structure of a Scene from Multi-view Images Captured by a Vehicle-Mounted Camera, *Ken Sakurada, Takayuki Okatani, Koichiro Deguchi*

9. Templateless Quasi-Rigid Shape Modeling with Implicit Loop-Closure, *Ming Zeng, Jiaxiang Zheng, Xuan Cheng, Xinguo Liu*
10. Understanding Bayesian Rooms Using Composite 3D Object Models, *Luca Del Pero, Joshua Bowdish, Bonnie Kermgard, Emily Hartley, Kobus Barnard*
11. Shape from Silhouette Probability Maps: Reconstruction of Thin Objects in the Presence of Silhouette Extraction and Calibration Error, *Amy Tabb*
12. Joint Geodesic Upsampling of Depth Images, *Ming-Yu Liu, Oncel Tuzel, Yuichi Taguchi*
13. Relative Volume Constraints for Single View 3D Reconstruction, *Eno Töppe, Claudia Nieuwenhuis, Daniel Cremers*
14. Is There a Procedural Logic to Architecture?, *Julien Weissenberg, Hayko Riemenschneider, Mukta Prasad, Luc Van Gool*
15. Category Modeling from Just a Single Labeling: Use Depth Information to Guide the Learning of 2D Models, *Quanshi Zhang, Xuan Song, Xiaowei Shao, Ryosuke Shibasaki, Huijing Zhao*
16. Bayesian Grammar Learning for Inverse Procedural Modeling, *Andelo Martinovic, Luc Van Gool*
17. Fusing Depth from Defocus and Stereo with Coded Apertures, *Yuichi Takeda, Shinsaku Hiura, Kosuke Sato*
18. Bayesian Depth-from-Defocus with Shading Constraints, *Chen Li, Shuochen Su, Yasuyuki Matsushita, Kun Zhou, Stephen Lin*
19. Multi-scale Curve Detection on Surfaces, *Michael Kolomenkin, Ilan Shimshoni, Ayellet Tal*
20. Intrinsic Characterization of Dynamic Surfaces, *Tony Tung, Takashi Matsuyama*
21. Pattern-Driven Colorization of 3D Surfaces, *George Leifman, Ayellet Tal*
22. Three-Dimensional Bilateral Symmetry Plane Estimation in the Phase Domain, *Ramakrishna Kakarala, Prabhu Kaliamoorthi, Vittal Premachandran*
23. Axially Symmetric 3D Pots Configuration System Using Axis of Symmetry and Break Curve, *Kilho Son, Eduardo B. Almeida, David B. Cooper*
24. Wide-Baseline Hair Capture Using Strand-Based Refinement, *Linjie Luo, Cha Zhang, Zhengyou Zhang, Szymon Rusinkiewicz*
25. Dense 3D Reconstruction from Severely Blurred Images Using a Single Moving Camera, *Hee Seok Lee, Kyoung Mu Lee*
26. Simultaneous Super-Resolution of Depth and Images Using a Single Camera, *Hee Seok Lee, Kyoung Mu Lee*
27. Recovering Stereo Pairs from Anaglyphs, *Armand Joulin, Sing Bing Kang*
28. Exploiting the Power of Stereo Confidences, *David Pfeiffer, Stefan Gehrig, Nicolai Schneider*
29. Ensemble Learning for Confidence Measures in Stereo Vision, *Ralf Haeusler, Rahul Nair, Daniel Kondermann*
30. Segment-Tree Based Cost Aggregation for Stereo Matching, *Xing Mei, Xun Sun, Weiming Dong, Haitao Wang, Xiaopeng Zhang*

0945–1015 Spotlight 1B: Statistics & Learning
(Oregon Ballroom 203-204)

Chairs : Sebastian Nowozin *(MS Research, Cambridge)*
Jean Ponce *(Ecole Normale Supérieure)*

Format (1 min. poster spotlight)

1. Multi-class Video Co-segmentation with a Generative Multi-video Model, *Wei-Chen Chiu, Mario Fritz*
2. A Bayesian Approach to Multimodal Visual Dictionary Learning, *Go Irie, Dong Liu, Zhenguo Li, Shih-Fu Chang*
3. A Statistical Model for Recreational Trails in Aerial Images, *Andrew Predoehl, Scott Morris, Kobus Barnard*
4. Beta Process Joint Dictionary Learning for Coupled Feature Spaces with Application to Single Image Super-Resolution, *Li He, Hairong Qi, Russell Zaretzki*
5. Dictionary Learning from Ambiguously Labeled Data, *Yi-Chen Chen, Vishal M. Patel, Jaishanker K. Pillai, Rama Chellappa, P. Jonathon Phillips*
6. Generalized Domain-Adaptive Dictionaries, *Sumit Shekhar, Vishal M. Patel, Hien V. Nguyen, Rama Chellappa*
7. Tag Taxonomy Aware Dictionary Learning for Region Tagging, *Jingjing Zheng, Zhuolin Jiang*

8. Block and Group Regularized Sparse Modeling for Dictionary Learning, *Yu-Tseh Chi, Mohsen Ali, Ajit Rajwade, Jeffrey Ho*
9. Multi-level Discriminative Dictionary Learning towards Hierarchical Visual Categorization, *Li Shen, Shuhui Wang, Gang Sun, Shuqiang Jiang, Qingming Huang*
10. Fast Convolutional Sparse Coding, *Hilton Bristow, Anders Eriksson, Simon Lucey*
11. In Defense of Sparsity Based Face Recognition, *Weihong Deng, Jiani Hu, Jun Guo*
12. Transfer Sparse Coding for Robust Image Representation, *Mingsheng Long, Guiguang Ding, Jianmin Wang, Jiaguang Sun, Yuchen Guo, Philip S. Yu*
13. Online Robust Dictionary Learning, *Cewu Lu, Jianping Shi, Jiaya Jia*
14. Multi-task Sparse Learning with Beta Process Prior for Action Recognition, *Chunfeng Yuan, Weiming Hu, Guodong Tian, Shuang Yang, Haoran Wang*
15. Scalable Sparse Subspace Clustering, *Xi Peng, Lei Zhang, Zhang Yi*
16. Separable Dictionary Learning, *Simon Hawe, Matthias Seibert, Martin Kleinsteuber*
17. Compressed Hashing, *Yue Lin, Rong Jin, Deng Cai, Shuicheng Yan, Xuelong Li*
18. Improved Image Set Classification via Joint Sparse Approximated Nearest Subspaces, *Shaokang Chen, Conrad Sanderson, Mehrtash T. Harandi, Brian C. Lovell*
19. Optimizing 1-Nearest Prototype Classifiers, *Paul Wohlhart, Martin Köstinger, Michael Donoser, Peter M. Roth, Horst Bischof*
20. Sparse Subspace Denoising for Image Manifolds, *Bo Wang, Zhuowen Tu*
21. Weakly Supervised Learning of Mid-level Features with Beta-Bernoulli Process Restricted Boltzmann Machines, *Roni Mittelman, Honglak Lee, Benjamin Kuipers, Silvio Savarese*
22. Learning Binary Codes for High-Dimensional Data Using Bilinear Projections, *Yunchao Gong, Sanjiv Kumar, Henry A. Rowley, Svetlana Lazebnik*
23. Semi-supervised Node Splitting for Random Forest Construction, *Xiao Liu, Mingli Song, Dacheng Tao, Zicheng Liu, Luming Zhang, Chun Chen, Jiajun Bu*
24. Capturing Layers in Image Collections with Componential Models: From the Layered Epitome to the Componential Counting Grid, *Alessandro Perina, Nebojsa Jojic*
25. Alternating Decision Forests, *Samuel Schulter, Paul Wohlhart, Christian Leistner, Amir Saffari, Peter M. Roth, Horst Bischof*
26. Exploring Implicit Image Statistics for Visual Representativeness Modeling, *Xiaoshuai Sun, Xin-Jing Wang, Hongxun Yao, Lei Zhang*
27. A Divide-and-Conquer Method for Scalable Low-Rank Latent Matrix Pursuit, *Yan Pan, Hanjiang Lai, Cong Liu, Shuicheng Yan*
28. Supervised Descent Method and Its Applications to Face Alignment, *Xuehan Xiong, Fernando De la Torre*
29. Robust Canonical Time Warping for the Alignment of Grossly Corrupted Sequences, *Yannis Panagakis, Mihalis A. Nicolaou, Stefanos Zafeiriou, Maja Pantic*
30. Relative Hidden Markov Models for Evaluating Motion Skills, *Qiang Zhang, Baoxin Li*
31. A Fast Approximate AIB Algorithm for Distributional Word Clustering, *Lei Wang, Jianjia Zhang, Luping Zhou, Wanqing Li*

1015–1200 Exhibits (Exhibit Halls A-A1)

- MERL
- Microsoft
- Google
- A9
- Intel
- Bing
- PrimeSense
- Qualcomm
- Springer
- now publishers
- Morgan & Claypool Publishers
- Cambridge University Press
- Taylor and Francis
- Elsevier
- 4D View Solutions
- Amazon
- Flutter
- Texas Instruments, Inc
- Eyeris
- Point Grey
- MathWorks

1015–1200 Demos (Exhibit Halls A-A1)

- Fast and Robust Image Deblurring, *Shicheng Zheng, Li Xu, Jiaya Jia, (The Chinese Univ. of Hong-Kong)*
- Sensing and Recognizing Surface Textures Using a GelSight Sensor, *Rui Li, Edward Adelson (MIT)*
- Visualizing Light Transport Phenomena in Real Time with a Primal-Dual Coding Video Camera, *Matthew O'Toole, John Mather, Kyros Kutulakos (University of Toronto)*

1015–1200 Poster Session (Exhibit Halls A-A1)

Posters for Tuesday Morning Papers & Spotlights (poster location layout is on the inside back cover).

Refreshments served the first 30 minutes.

1200–1330 Lunch (Exhibit Hall B)

1200–1330 Doctoral Consortium (Exhibit Hall A1) (by invitation only)

Supported by:

National Science Foundation
WHERE DISCOVERIES BEGIN

- Aly Abdelrahim (*Univ. of Louisville*)
- Yu Cao (*Univ. of South Carolina*)
- Joao Carreira (*Univ. of Coimbra*)
- Shayok Chakraborty (*Arizona State Univ.*)
- Lin Chen (*Nanyang Technological Univ.*)
- Wongun Choi (*Univ. of Michigan*)
- Donald Dansereau (*Univ. of Sydney*)
- Chong Ding (*Univ. of California, Riverside*)
- Katerina Fragkiadaki (*Univ. of Pennsylvania*)
- Ravi Garg (*Queen Mary Univ. of London*)
- Yen Le Hai (*Univ. of Houston*)
- Ankur Handa (*Imperial College London*)
- Sungju Hwang (*Univ. of Texas at Austin*)
- Ahmed Kamal (*Univ. of California, Riverside*)
- Gunhee Kim (*Carnegie Mellon Univ.*)
- Martin Koestinger (*Graz Univ. of Technology*)
- Adriana Kovashka (*Univ. of Texas at Austin*)
- Nikolaos Kyriazis (*Univ. of Crete*)
- Tian Lan (*Simon Fraser Univ.*)
- Laura Leal-Taixe (*Leibniz Universitaet Hannover*)
- George Leifman (*Technion - Israel Institute of Technology*)
- Aurelien Lucchi (*EPFL*)
- Tianyang Ma (*Temple Univ.*)
- Mohammad Mavadati (*Univ. of Denver*)
- Anton Milan (*Technische Universitaet Darmstadt*)
- Roozbeh Mottaghi (*Univ. of California, Los Angeles*)
- Manjunath Narayana (*Univ. of Massachusetts Amherst*)
- Anton Osokin (*Moscow State Univ.*)
- Amir Sadovnik (*Cornell Univ.*)
- Torsten Sattler (*RWTH Aachen Univ.*)
- Boxin Shi (*Univ. of Tokyo*)
- Li Li Tao (*Univ. of Central Lancashire*)
- Joseph Tighe (*Univ. of North Carolina at Chapel Hill*)
- Dong Wang (*Dalian Univ. of Technology*)
- Jiang Wang (*Northwestern Univ.*)
- Lu Xia (*Univ. of Texas at Austin*)
- Jianxiong Xiao (*Massachusetts Institute of Technology*)
- Haichao Zhang (*Northwestern Polytechnical Univ.*)
- Yinqiang Zheng (*Tokyo Institute of Technology*)
- Xiaowei Zhou (*Hong Kong Univ. of Science and Tech.*)

1330–1445 Orals 1C: Recognition
(Oregon Ballroom 201-202)

Chairs : Deva Ramanan *(Univ. of California at Irvine)*
Jamie Shotton *(Microsoft Research)*

Format (13 min. for presentation + 2 min. for questions)

1. Perceptual Organization and Recognition of Indoor Scenes from RGB-D Images, *Saurabh Gupta, Pablo Arbeláez, Jitendra Malik*
2. Watching Unlabeled Video Helps Learn New Human Actions from Very Few Labeled Snapshots, *Chao-Yeh Chen, Kristen Grauman*
3. Fine-Grained Crowdsourcing for Fine-Grained Recognition, *Jia Deng, Jonathan Krause, Li Fei-Fei*
4. Poselet Conditioned Pictorial Structures, *Leonid Pishchulin, Mykhaylo Andriluka, Peter Gehler, Bernt Schiele*
5. Beyond Physical Connections: Tree Models in Human Pose Estimation, *Fang Wang, Yi Li*

1330–1445 Orals 1D: Imaging & Segmentation
(Oregon Ballroom 203-204)

Chairs : Michael Brown *(National Univ. of Singapore)*
Josef Sivic *(Ecole Normale Supérieure)*

Format (13 min. for presentation + 2 min. for questions)

1. Discriminative Non-blind Deblurring, *Uwe Schmidt, Carsten Rother, Sebastian Nowozin, Jeremy Jancsary, Stefan Roth*
2. Handling Noise in Single Image Deblurring Using Directional Filters, *Lin Zhong, Sunghyun Cho, Dimitris Metaxas, Sylvain Paris, Jue Wang*
3. Jointly Aligning and Segmenting Multiple Web Photo Streams for the Inference of Collective Photo Storylines, *Gunhee Kim, Eric P. Xing*
4. Video Object Segmentation through Spatially Accurate and Temporally Dense Extraction of Primary Object Regions, *Dong Zhang, Omar Javed, Mubarak Shah*
5. Improving Image Matting Using Comprehensive Sampling Sets, *Ehsan Shahrian, Deepu Rajan, Brian Price, Scott Cohen*

1445–1525 Spotlight 1C: Recognition
(Oregon Ballroom 201-202)

Chairs : Kristen Grauman *(Univ. of Texas at Austin)*
Devi Parikh *(Virginia Tech)*

Format (1 min. poster spotlight)

1. Simultaneous Active Learning of Classifiers & Attributes via Relative Feedback, *Arijit Biswas, Devi Parikh*
2. Expanded Parts Model for Human Attribute and Action Recognition in Still Images, *Gaurav Sharma, Frédéric Jurie, Cordelia Schmid*
3. Multipath Sparse Coding Using Hierarchical Matching Pursuit, *Liefeng Bo, Xiaofeng Ren, Dieter Fox*
4. Semi-supervised Domain Adaptation with Instance Constraints, *Jeff Donahue, Judy Hoffman, Erik Rodner, Kate Saenko, Trevor Darrell*
5. Learning Structured Low-Rank Representations for Image Classification, *Yangmuzi Zhang, Zhuolin Jiang, Larry S. Davis*
6. MKPLS: Manifold Kernel Partial Least Squares for Lipreading and Speaker Identification, *Amr Bakry, Ahmed Elgammal*
7. Subspace Interpolation via Dictionary Learning for Unsupervised Domain Adaptation, *Jie Ni, Qiang Qiu, Rama Chellappa*
8. Graph-Based Discriminative Learning for Location Recognition, *Song Cao, Noah Snavely*
9. Learning by Associating Ambiguously Labeled Images, *Zinan Zeng, Shijie Xiao, Kui Jia, Tsung-Han Chan, Shenghua Gao, Dong Xu, Yi Ma*
10. HON4D: Histogram of Oriented 4D Normals for Activity Recognition from Depth Sequences, *Omar Oreifej, Zicheng Liu*
11. 3D *R* Transform on Spatio-temporal Interest Points for Action Recognition, *Chunfeng Yuan, Xi Li, Weiming Hu, Haibin Ling, Stephen Maybank*
12. Learning Cross-Domain Information Transfer for Location Recognition and Clustering, *Raghuraman Gopalan*
13. Studying Relationships between Human Gaze, Description, and Computer Vision, *Kiwon Yun, Yifan Peng, Dimitris Samaras, Gregory J. Zelinsky, Tamara L. Berg*

14. BoF Meets HOG: Feature Extraction Based on Histograms of Oriented p.d.f. Gradients for Image Classification, *Takumi Kobayashi*
15. Class Generative Models Based on Feature Regression for Pose Estimation of Object Categories, *Michele Fenzi, Laura Leal-Taixé, Bodo Rosenhahn, Jörn Ostermann*
16. Leveraging Structure from Motion to Learn Discriminative Codebooks for Scalable Landmark Classification, *Alessandro Bergamo, Sudipta N. Sinha, Lorenzo Torresani*
17. Designing Category-Level Attributes for Discriminative Visual Recognition, *Felix X. Yu, Liangliang Cao, Rogerio S. Feris, John R. Smith, Shih-Fu Chang*
18. Attribute-Based Detection of Unfamiliar Classes with Humans in the Loop, *Catherine Wah, Serge Belongie*
19. Object-Centric Anomaly Detection by Attribute-Based Reasoning, *Babak Saleh, Ali Farhadi, Ahmed Elgammal*
20. Learning Class-to-Image Distance with Object Matchings, *Guang-Tong Zhou, Tian Lan, Weilong Yang, Greg Mori*
21. Sample-Specific Late Fusion for Visual Category Recognition, *Dong Liu, Kuan-Ting Lai, Guangnan Ye, Ming-Syan Chen, Shih-Fu Chang*
22. Efficient Object Detection and Segmentation for Fine-Grained Recognition, *Anelia Angelova, Shenghuo Zhu*
23. Label-Embedding for Attribute-Based Classification, *Zeynep Akata, Florent Perronnin, Zaid Harchaoui, Cordelia Schmid*
24. Subcategory-Aware Object Classification, *Jian Dong, Wei Xia, Qiang Chen, Jianshi Feng, Zhongyang Huang, Shuicheng Yan*
25. Vantage Feature Frames for Fine-Grained Categorization, *Asma Rejeb Sfar, Nozha Boujemaa, Donald Geman*
26. Probabilistic Label Trees for Efficient Large Scale Image Classification, *Baoyuan Liu, Fereshteh Sadeghi, Marshall Tappen, Ohad Shamir, Ce Liu*
27. Harvesting Mid-level Visual Concepts from Large-Scale Internet Images, *Quannan Li, Jiajun Wu, Zhuowen Tu*
28. Adaptive Active Learning for Image Classification, *Xin Li, Yuhong Guo*
29. SCaLE: Supervised and Cascaded Laplacian Eigenmaps for Visual Object Recognition Based on Nearest Neighbors, *Ruobing Wu, Yizhou Yu, Wenping Wang*
30. Adding Unlabeled Samples to Categories by Learned Attributes, *Jonghyun Choi, Mohammad Rastegari, Ali Farhadi, Larry S. Davis*
31. Visual Place Recognition with Repetitive Structures, *Akihiko Torii, Josef Sivic, Tomáš Pajdla, Masatoshi Okutomi*
32. Cross-View Image Geolocalization, *Tsung-Yi Lin, Serge Belongie, James Hays*
33. Efficient 2D-to-3D Correspondence Filtering for Scalable 3D Object Recognition, *Qiang Hao, Rui Cai, Zhiwei Li, Lei Zhang, Yanwei Pang, Feng Wu, Yong Rui*
34. Learning and Calibrating Per-Location Classifiers for Visual Place Recognition, *Petr Gronát, Guillaume Obozinski, Josef Sivic, Tomáš Pajdla*
35. An Approach to Pose-Based Action Recognition, *Chunyu Wang, Yizhou Wang, Alan L. Yuille*
36. Blocks That Shout: Distinctive Parts for Scene Classification, *Mayank Juneja, Andrea Vedaldi, C.V. Jawahar, Andrew Zisserman*
37. Part Discovery from Partial Correspondence, *Subhransu Maji, Gregory Shakhnarovich*
38. Learning Collections of Part Models for Object Recognition, *Ian Endres, Kevin J. Shih, Johnston Jiaa, Derek Hoiem*
39. Fast Multiple-Part Based Object Detection Using KD-Ferns, *Dan Levi, Shai Silberstein, Aharon Bar-Hillel*
40. POOF: Part-Based One-vs-One Features for Fine-Grained Categorization, Face Verification, and Attribute Estimation, *Thomas Berg, Peter N. Belhumeur*

1445–1525 Spotlight 1D: Imaging
(Oregon Ballroom 203-204)

Chairs : James Hays *(Brown Univ.)*
Kyoung Mu Lee *(Seoul National Univ.)*

Format (1 min. poster spotlight)

1. Non-parametric Filtering for Geometric Detail Extraction and Material Representation, *Zicheng Liao, Jason Rock, Yang Wang, David Forsyth*
2. Learning the Change for Automatic Image Cropping, *Jianzhou Yan, Stephen Lin, Sing Bing Kang, Xiaoou Tang*

3. Statistical Textural Distinctiveness for Salient Region Detection in Natural Images, *Christian Scharfenberger, Alexander Wong, Khalil Fergani, John S. Zelek, David A. Clausi*
4. Real-Time No-Reference Image Quality Assessment Based on Filter Learning, *Peng Ye, Jayant Kumar, Le Kang, David Doermann*
5. Learning without Human Scores for Blind Image Quality Assessment, *Wufeng Xue, Lei Zhang, Xuanqin Mou*
6. The Variational Structure of Disparity and Regularization of 4D Light Fields, *Bastian Goldluecke, Sven Wanner*
7. Globally Consistent Multi-label Assignment on the Ray Space of 4D Light Fields, *Sven Wanner, Christoph Straehle, Bastian Goldluecke*
8. Principal Observation Ray Calibration for Tiled-Lens-Array Integral Imaging Display, *Weiming Li, Haitao Wang, Mingcai Zhou, Shandong Wang, Shaohui Jiao, Xing Mei, Tao Hong, Hoyoung Lee, Jiyeun Kim*
9. Decoding, Calibration and Rectification for Lenselet-Based Plenoptic Cameras, *Donald G. Dansereau, Oscar Pizarro, Stefan B. Williams*
10. Adherent Raindrop Detection and Removal in Video, *Shaodi You, Robby T. Tan, Rei Kawakami, Katsushi Ikeuchi*
11. Stochastic Deconvolution, *James Gregson, Felix Heide, Matthias B. Hullin, Mushfiqur Rouf, Wolfgang Heidrich*
12. Multi-image Blind Deblurring Using a Coupled Adaptive Sparse Prior, *Haichao Zhang, David Wipf, Yanning Zhang*
13. Fast Image Super-Resolution Based on In-Place Example Regression, *Jianchao Yang, Zhe Lin, Scott Cohen*
14. A Machine Learning Approach for Non-blind Image Deconvolution, *Christian J. Schuler, Harold Christopher Burger, Stefan Harmeling, Bernhard Schölkopf*
15. Learning to Estimate and Remove Non-uniform Image Blur, *Florent Couzinié-Devy, Jian Sun, Karteek Alahari, Jean Ponce*
16. On a Link Between Kernel Mean Maps and Fraunhofer Diffraction, with an Application to Super-Resolution Beyond the Diffraction Limit, *Stefan Harmeling, Michael Hirsch, Bernhard Schölkopf*
17. Blur Processing Using Double Discrete Wavelet Transform, *Yi Zhang, Keigo Hirakawa*
18. Structured Face Hallucination, *Chih-Yuan Yang, Sifei Liu, Ming-Hsuan Yang*
19. Unnatural Lo Sparse Representation for Natural Image Deblurring, *Li Xu, Shicheng Zheng, Jiaya Jia*
20. Non-uniform Motion Deblurring for Bilayer Scenes, *Chandramouli Paramanand, Ambasamudram N. Rajagopalan*
21. Depth Super Resolution by Rigid Body Self-Similarity in 3D, *Michael Hornáček, Christoph Rhemann, Margrit Gelautz, Carsten Rother*
22. Saliency Aggregation: A Data-Driven Approach, *Long Mai, Yuzhen Niu, Feng Liu*
23. What Makes a Patch Distinct?, *Ran Margolin, Ayellet Tal, Lihi Zelnik-Manor*
24. Learning Video Saliency from Human Gaze Using Candidate Selection, *Dmitry Rudoy, Dan B. Goldman, Eli Shechtman, Lihi Zelnik-Manor*
25. Hierarchical Saliency Detection, *Qiong Yan, Li Xu, Jianping Shi, Jiaya Jia*
26. HDR Deghosting: How to Deal with Saturation?, *Jun Hu, Orazio Gallo, Kari Pulli, Xiaobai Sun*
27. FrameBreak: Dramatic Image Extrapolation by Guided Shift-Maps, *Yinda Zhang, Jianxiong Xiao, James Hays, Ping Tan*
28. Video Enhancement of People Wearing Polarized Glasses: Darkening Reversal and Reflection Reduction, *Mao Ye, Cha Zhang, Ruigang Yang*
29. Layer Depth Denoising and Completion for Structured-Light RGB-D Cameras, *Ju Shen, Sen-Ching S. Cheung*
30. Separating Signal from Noise Using Patch Recurrence across Scales, *Maria Zontak, Inbar Mosseri, Michal Irani*
31. Texture Enhanced Image Denoising via Gradient Histogram Preservation, *Wangmeng Zuo, Lei Zhang, Chunwei Song, David Zhang*
32. Fast Patch-Based Denoising Using Approximated Patch Geodesic Paths, *Xiaogang Chen, Sing Bing Kang, Jie Yang, Jingyi Yu*
33. A New Model and Simple Algorithms for Multi-label Mumford-Shah Problems, *Byung-Woo Hong, Zhaojin Lu, Ganesh Sundaramoorthi*
34. Computing Diffeomorphic Paths for Large Motion Interpolation, *Dohyung Seo, Jeffrey Ho, Baba C. Vemuri*

35. Rotation, Scaling and Deformation Invariant Scattering for Texture Discrimination, *Laurent Sifre, Stéphane Mallat*
36. Sensing and Recognizing Surface Textures Using a GelSight Sensor, *Rui Li, Edward H. Adelson*
37. Enriching Texture Analysis with Semantic Data, *Tim Matthews, Mark S. Nixon, Mahesan Niranjan*

1525–1730 **Exhibits** (Exhibit Halls A-A1)

- Same as Tuesday morning Exhibits (see pg. 21)

1525–1730 **Demos** (Exhibit Halls A-A1)

- Expresive Visual Text to Speech, *Robert Anderson, Björn Stenger, Vincent Wan, BalaKrishna Kolluru, Roberto Cipolla (Univ. of Cambridge & Toshiba Research Europe)*
- Real-time Facial Feature Tracking in MATLAB, *Xuehan Xiong, Fernando De la Torre (Carnegie Mellon Univ.)*
- Intraface, *Fernando De la Torre, Wen-Sheng Chu, Xuehan Xiong, Dong Huang, Jeff Cohn (Carnegie Mellon Univ. & Univ. of Pittsburgh)*
- Cameras and Gravity: Estimatiing Planar Object Orientation, *Zhaoyin Jia, Zeyuan Chen, Andrew Gallagher, Tsuhan Chen (Cornell University)*

1525–1730 **Poster Session** (Exhibit Halls A-A1)

Posters for Tuesday Aftenoon Papers & Spotlights (poster location layout is on the inside back cover).

Refreshments served the first 30 minutes.

1730–1900 **Reception** (Exhibit Hall B)

1900–2100 **PAMI TC Meeting** (Oregon Ballroom 201-202)

Wednesday, June 26

0730–0830 Breakfast (Exhibit Hall B)

0730–1730 Registration (Pre-function A)

0730–1730 Computer Room (A102)

0830–0945 Oral 2A: Motion & Reconstruction
(Oregon Ballroom 201-202)

Chairs : Marc Pollefeys *(ETH Zurich)*
Noah Snavely *(Cornell Univ.)*

Format (13 min. for presentation + 2 min. for questions)

1. Megastereo: Constructing High-Resolution Stereo Panoramas, *Christian Richardt, Yael Pritch, Henning Zimmer, Alexander Sorkine-Hornung*
2. Dense Object Reconstruction with Semantic Priors, *Sid Yingze Bao, Manmohan Chandraker, Yuanqing Lin, Silvio Savarese*
3. Dense Variational Reconstruction of Non-rigid Surfaces from Monocular Video, *Ravi Garg, Anastasios Roussos, Lourdes Agapito*
4. Procrustean Normal Distribution for Non-rigid Structure from Motion, *Minsik Lee, Jungchan Cho, Chong-Ho Choi, Songhwai Oh*
5. Dense Reconstruction Using 3D Object Shape Priors, *Amaury Dame, Victor A. Prisacariu, Carl Y. Ren, Ian Reid*

0830–0945 Oral 2B: Optimization Methods
(Oregon Ballroom 203-204)

Chairs : Sameer Agarwal *(Google)*
Pushmeet Kohli *(Microsoft Research Cambridge)*

Format (13 min. for presentation + 2 min. for questions)

1. Gauging Association Patterns of Chromosome Territories via Chromatic Median, *Hu Ding, Branislav Stojkovic, Ronald Berezney, Jinhui Xu*
2. Auxiliary Cuts for General Classes of Higher Order Functionals, *Ismail Ben Ayed, Lena Gorelick, Yuri Boykov*
3. A Fast Semidefinite Approach to Solving Binary Quadratic Problems, *Peng Wang, Chunhua Shen, Anton van den Hengel*
4. Diffusion Processes for Retrieval Revisited, *Michael Donoser, Horst Bischof*
5. A Comparative Study of Modern Inference Techniques for Discrete Energy Minimization Problems, *Jörg H. Kappes, Bjoern Andres, Fred A. Hamprecht, Christoph Schnörr, Sebastian Nowozin, Dhruv Batra, Sungwoong Kim, Bernhard X. Kausler, Jan Lellmann, Nikos Komodakis, Carsten Rother*

0945–1015 Spotlight 2A: Pose & Photometry
(Oregon Ballroom 201-202)

Chairs : Katsushi Ikeuchi *(Univ. of Tokyo)*
Yasuyuki Matsushita *(Microsoft Research Asia)*

Format (1 min. poster spotlight)

1. A Global Approach for the Detection of Vanishing Points and Mutually Orthogonal Vanishing Directions, *Michel Antunes, João P. Barreto*
2. Cloud Motion as a Calibration Cue, *Nathan Jacobs, Mohammad T. Islam, Scott Workman*
3. SLAM++: Simultaneous Localisation and Mapping at the Level of Objects, *Renato F. Salas-Moreno, Richard A. Newcombe, Hauke Strasdat, Paul H.J. Kelly, Andrew J. Davison*
4. Rolling Shutter Camera Calibration, *Luc Oth, Paul Furgale, Laurent Kneip, Roland Siegwart*
5. Radial Distortion Self-Calibration, *José Henrique Brito, Roland Angst, Kevin Köser, Marc Pollefeys*
6. A Minimum Error Vanishing Point Detection Approach for Uncalibrated Monocular Images of Man-Made Environments, *Yiliang Xu, Sangmin Oh, Anthony Hoogs*
7. Five Shades of Grey for Fast and Reliable Camera Pose Estimation, *Adam Herout, István Szentandrási, Michal Zachariáš, Markéta Dubská, Rudolf Kajan*
8. Can a Fully Unconstrained Imaging Model Be Applied Effectively to Central Cameras?, *Filippo Bergamasco, Andrea Albarelli, Emanuele Rodolà, Andrea Torsello*
9. Single Image Calibration of Multi-axial Imaging Systems, *Amit Agrawal, Srikumar Ramalingam*

10. The Episolar Constraint: Monocular Shape from Shadow Correspondence, *Austin Abrams, Kylia Miskell, Robert Pless*
11. Shading-Based Shape Refinement of RGB-D Images, *Lap-Fai Yu, Sai-Kit Yeung, Yu-Wing Tai, Stephen Lin*
12. Illumination Estimation Based on Bilayer Sparse Coding, *Bing Li, Weihua Xiong, Weiming Hu, Houwen Peng*
13. Learning Discriminative Illumination and Filters for Raw Material Classification with Optimal Projections of Bidirectional Texture Functions, *Chao Liu, Gefei Yang, Jinwei Gu*
14. A Theory of Refractive Photo-Light-Path Triangulation, *Visesh Chari, Peter Sturm*
15. Analytic Bilinear Appearance Subspace Construction for Modeling Image Irradiance Under Natural Illumination and Non-Lambertian Reflectance, *Shireen Y. Elhabian, Aly A. Farag*
16. Spectral Modeling and Relighting of Reflective-Fluorescent Scenes, *Antony Lam, Imari Sato*
17. Specular Reflection Separation Using Dark Channel Priors, *Hyeongwoo Kim, Hailin Jin, Sunil Hadap, Inso Kweon*
18. BRDF Slices: Accurate Adaptive Anisotropic Appearance Acquisition, *Jirí Filip, Radomír Vávra, Michal Haindl, Pavel Žid, Mikuláš Krupika, Vlastimil Havran*
19. A New Perspective on Uncalibrated Photometric Stereo, *Thoma Papadhimitri, Paolo Favaro*
20. Multi-view Photometric Stereo with Spatially Varying Isotropic Materials, *Zhenglong Zhou, Zhe Wu, Ping Tan*
21. Uncalibrated Photometric Stereo for Unknown Isotropic Reflectances, *Feng Lu, Yasuyuki Matsushita, Imari Sato, Takahiro Okabe, Yoichi Sato*
22. Calibrating Photometric Stereo by Holistic Reflectance Symmetry Analysis, *Zhe Wu, Ping Tan*
23. Articulated and Restricted Motion Subspaces and Their Signatures, *Bastien Jacquet, Roland Angst, Marc Pollefeys*
24. Template-Based Isometric Deformable 3D Reconstruction with Sampling-Based Focal Length Self-Calibration, *Adrien Bartoli, Toby Collins*
25. Monocular Template-Based 3D Reconstruction of Extensible Surfaces with Local Linear Elasticity, *Abed Malti, Richard Hartley, Adrien Bartoli, Jae-Hak Kim*
26. Non-rigid Structure from Motion with Diffusion Maps Prior, *Lili Tao, Bogdan J. Matuszewski*
27. Joint Detection, Tracking and Mapping by Semantic Bundle Adjustment, *Nicola Fioraio, Luigi Di Stefano*
28. A Practical Rank-Constrained Eight-Point Algorithm for Fundamental Matrix Estimation, *Yinqiang Zheng, Shigeki Sugimoto, Masatoshi Okutomi*
29. CLAM: Coupled Localization and Mapping with Efficient Outlier Handling, *Jonathan Balzer, Stefano Soatto*

0945–1015 Spotlight 2B: Methods & Retrieval
(Oregon Ballroom 203-204)

Chairs : Yuri Boykov *(Univ. of Western Ontario)*
Fredrik Kahl *(Lund Univ.)*

Format (1 min. poster spotlight)

1. Inductive Hashing on Manifolds, *Fumin Shen, Chunhua Shen, Qinfeng Shi, Anton van den Hengel, Zhenmin Tang*
2. Hash Bit Selection: A Unified Solution for Selection Problems in Hashing, *Xianglong Liu, Junfeng He, Bo Lang, Shih-Fu Chang*
3. All About VLAD, *Relja Arandjelović, Andrew Zisserman*
4. Binary Code Ranking with Weighted Hamming Distance, *Lei Zhang, Yongdong Zhang, Jinhu Tang, Ke Lu, Qi Tian*
5. Consensus of k-NNs for Robust Neighborhood Selection on Graph-Based Manifolds, *Vittal Premachandran, Ramakrishna Kakarala*
6. Topical Video Object Discovery from Key Frames by Modeling Word Co-occurrence Prior, *Gangqiang Zhao, Junsong Yuan, Gang Hua*
7. Query Adaptive Similarity for Large Scale Object Retrieval, *Danfeng Qin, Christian Wengert, Luc Van Gool*
8. Image Tag Completion via Image-Specific and Tag-Specific Linear Sparse Reconstructions, *Zijia Lin, Guiguang Ding, Mingqing Hu, Jianmin Wang, Xiaojun Ye*
9. $\mathcal{L}_p$-Norm IDF for Large Scale Image Search, *Liang Zheng, Shengjin Wang, Ziqiong Liu, Qi Tian*
10. Constraints as Features, *Shmuel Asafi, Daniel Cohen-Or*
11. Learning a Manifold as an Atlas, *Nikolaos Pitelis, Chris Russell, Lourdes Agapito*
12. Semi-supervised Learning of Feature Hierarchies for Object Detection in a Video, *Yang Yang, Guang Shu, Mubarak Shah*

13. Fully-Connected CRFs with Non-parametric Pairwise Potentials, *Neill D.F. Campbell, Kartic Subr, Jan Kautz*
14. Discriminative Sub-categorization, *Minh Hoai, Andrew Zisserman*
15. Whitened Expectation Propagation: Non-Lambertian Shape from Shading and Shadow, *Brian Potetz, Mohammadreza Hajiarbabi*
16. Fast Energy Minimization Using Learned State Filters, *Matthieu Guillaumin, Luc Van Gool, Vittorio Ferrari*
17. Bilinear Programming for Human Activity Recognition with Unknown MRF Graphs, *Zhenhua Wang, Qinfeng Shi, Chunhua Shen, Anton van den Hengel*
18. A Higher-Order CRF Model for Road Network Extraction, *Jan D. Wegner, Javier A. Montoya-Zegarra, Konrad Schindler*
19. Nonlinearly Constrained MRFs: Exploring the Intrinsic Dimensions of Higher-Order Cliques, *Yun Zeng, Chaohui Wang, Stefano Soatto, Shing-Tung Yau*
20. Fast Trust Region for Segmentation, *Lena Gorelick, Frank R. Schmidt, Yuri Boykov*
21. Optimal Geometric Fitting Under the Truncated ℓ_2-Norm, *Erik Ask, Olof Enqvist, Fredrik Kahl*
22. In Defense of 3D-Label Stereo, *Carl Olsson, Johannes Ulén, Yuri Boykov*
23. Universality of the Local Marginal Polytope, *Daniel Průša, Tomáš Werner*
24. Continuous Inference in Graphical Models with Polynomial Energies, *Mathieu Salzmann*
25. Towards Efficient and Exact MAP-Inference for Large Scale Discrete Computer Vision Problems via Combinatorial Optimization, *Jörg Hendrik Kappes, Markus Speth, Gerhard Reinelt, Christoph Schnörr*
26. An Iterated ℓ_1 Algorithm for Non-smooth Non-convex Optimization in Computer Vision, *Peter Ochs, Alexey Dosovitskiy, Thomas Brox, Thomas Pock*
27. A Genetic Algorithm-Based Solver for Very Large Jigsaw Puzzles, *Dror Sholomon, Omid David, Nathan S. Netanyahu*
28. A Convex Regularizer for Reducing Color Artifact in Color Image Recovery, *Shunsuke Ono, Isao Yamada*
29. Kernel Learning for Extrinsic Classification of Manifold Features, *Raviteja Vemulapalli, Jaishanker K. Pillai, Rama Chellappa*

1015–1200 **Exhibits** (Exhibit Halls A-A1)

- Same as Tuesday morning Exhibits (see pg. 21)

1015–1200 **Demos** (Exhibit Halls A-A1)

- GPS Trace Analysis with Image Data, *Anil Cheriyadat, Jiangye Yuan (Oak Ridge National Laboratory)*
- Opportunistic Sensing Through Collaboration in a Wide Area Camera Network, *Chong Ding, Amit Roy Chowdhury (UC Riverside)*
- Real Time, Large-scale Visual-inertial Navigation for Mobile Devices, *Mingyang Li, Anastasios Mourikis (Univ. of California, Riverside)*
- Take Your Eyes Off the Ball: Tracking the Invisible in Team Sports, *Vitaly Ablavsky, Horesh Ben Shitrit, Xinchao Wang, Pascal Fue (EPFL)*

1015–1200 **Poster Session** (Exhibit Halls A-A1)

Posters for Wednesday Morning Papers & Spotlights (poster location layout is on the inside back cover).

Refreshments served the first 30 minutes.

1200–1330 **Lunch** (Exhibit Hall B)

1330–1445 Orals 2C: Detection (& Medical/Curves)
(Oregon Ballroom 201-202)

Chairs : Jason Corso *(SUNY at Buffalo)*
Larry Zitnick *(Microsoft Research)*

Format (13 min. for presentation + 2 min. for questions)

1. Learning Structured Hough Voting for Joint Object Detection and Occlusion Reasoning, *Tao Wang, Xuming He, Nick Barnes*
2. Detection Evolution with Multi-order Contextual Co-occurrence, *Guang Chen, Yuanyuan Ding, Jing Xiao, Tony X. Han*
3. Efficient Large-Scale Structured Learning, *Steve Branson, Oscar Beijbom, Serge Belongie*
4. Fast, Accurate Detection of 100,000 Object Classes on a Single Machine, *Thomas Dean, Mark A. Ruzon, Mark Segal, Jonathon Shlens, Sudheendra Vijayanarasimhan, Jay Yagnik*
5. Reconstructing Loopy Curvilinear Structures Using Integer Programming, *Engin Türetken, Fethallah Benmansour, Bjoern Andres, Hanspeter Pfister, Pascal Fua*

1330–1445 Orals 2D: Tracking & Flow
(Oregon Ballroom 203-204)

Chairs : David Forsyth *(UIUC)*
Stefan Roth *(Technishe Universität Darmstadt)*

Format (13 min. for presentation + 2 min. for questions)

1. Tracking Sports Players with Context-Conditioned Motion Models, *Jingchen Liu, Peter Carr, Robert T. Collins, Yanxi Liu*
2. Structure Preserving Object Tracking, *Lu Zhang, Laurens van der Maaten*
3. Multi-target Tracking by Lagrangian Relaxation to Min-cost Network Flow, *Asad A. Butt, Robert T. Collins*
4. PatchMatch Filter: Efficient Edge-Aware Filtering Meets Randomized Search for Fast Correspondence Field Estimation, *Jiangbo Lu, Hongsheng Yang, Dongbo Min, Minh N. Do*
5. Robust Monocular Epipolar Flow Estimation, *Koichiro Yamaguchi, David McAllester, Raquel Urtasun*

1445–1525 Spotlight 2C: Segmentation & Shape
(Oregon Ballroom 201-202)

Chairs : Jitendra Malik *(Univ. of California at Berkeley)*
Andrea Vedaldi *(Univ. of Oxford)*

Format (1 min. poster spotlight)

1. Deep Learning Shape Priors for Object Segmentation, *Fei Chen, Huimin Yu, Roland Hu, Xunxun Zeng*
2. PDM-ENLOR: Learning Ensemble of Local PDM-Based Regressions, *Yen H. Le, Uday Kurkure, Ioannis A. Kakadiaris*
3. Incorporating User Interaction and Topological Constraints within Contour Completion via Discrete Calculus, *Jia Xu, Maxwell D. Collins, Vikas Singh*
4. Recovering Line-Networks in Images by Junction-Point Processes, *Dengfeng Chai, Wolfgang Förstner, Florent Lafarge*
5. Image Matting with Local and Nonlocal Smooth Priors, *Xiaowu Chen, Dongqing Zou, Steven ZhiYing Zhou, Qinping Zhao, Ping Tan*
6. Probabilistic Graphlet Cut: Exploiting Spatial Structure Cue for Weakly Supervised Image Segmentation, *Luming Zhang, Mingli Song, Zicheng Liu, Xiao Liu, Jiajun Bu, Chun Chen*
7. Towards Fast and Accurate Segmentation, *Camillo Jose Taylor*
8. Discriminative Re-ranking of Diverse Segmentations, *Payman Yadollahpour, Dhruv Batra, Gregory Shakhnarovich*
9. Robust Region Grouping via Internal Patch Statistics, *Xiaobai Liu, Liang Lin, Alan L. Yuille*
10. Unsupervised Joint Object Discovery and Segmentation in Internet Images, *Michael Rubinstein, Armand Joulin, Johannes Kopf, Ce Liu*
11. Ensemble Video Object Cut in Highly Dynamic Scenes, *Xiaobo Ren, Tony X. Han, Zhihai He*
12. Graph Transduction Learning with Connectivity Constraints with Application to Multiple Foreground Cosegmentation, *Tianyang Ma, Longin Jan Latecki*
13. Top-Down Segmentation of Non-rigid Visual Objects Using Derivative-Based Search on Sparse Manifolds, *Jacinto C. Nascimento, Gustavo Carneiro*
14. A Principled Deep Random Field Model for Image Segmentation, *Pushmeet Kohli, Anton Osokin, Stefanie Jegelka*

15. Background Modeling Based on Bidirectional Analysis, *Atsushi Shimada, Hajime Nagahara, Rin-ichiro Taniguchi*
16. Learning for Structured Prediction Using Approximate Subgradient Descent with Working Sets, *Aurélien Lucchi, Yunpeng Li, Pascal Fua*
17. A Sentence Is Worth a Thousand Pixels, *Sanja Fidler, Abhishek Sharma, Raquel Urtasun*
18. GRASP Recurring Patterns from a Single View, *Jingchen Liu, Yanxi Liu*
19. Image Segmentation by Cascaded Region Agglomeration, *Zhile Ren, Gregory Shakhnarovich*
20. Augmenting CRFs with Boltzmann Machine Shape Priors for Image Labeling, *Andrew Kae, Kihyuk Sohn, Honglak Lee, Erik Learned-Miller*
21. Voxel Cloud Connectivity Segmentation - Supervoxels for Point Clouds, *Jeremie Papon, Alexey Abramov, Markus Schoeler, Florentin Wörgötter*
22. SCALPEL: Segmentation CAscades with Localized Priors and Efficient Learning, *David Weiss, Ben Taskar*
23. Submodular Salient Region Detection, *Zhuolin Jiang, Larry S. Davis*
24. A Video Representation Using Temporal Superpixels, *Jason Chang, Donglai Wei, John W. Fisher III*
25. Pose from Flow and Flow from Pose, *Katerina Fragkiadaki, Han Hu, Jianbo Shi*
26. Mesh Based Semantic Modelling for Indoor and Outdoor Scenes, *Julien P.C. Valentin, Sunando Sengupta, Jonathan Warrell, Ali Shahrokni, Philip H.S. Torr*
27. Weakly-Supervised Dual Clustering for Image Semantic Segmentation, *Yang Liu, Jing Liu, Zechao Li, Jinhui Tang, Hanqing Lu*
28. Salient Object Detection: A Discriminative Regional Feature Integration Approach, *Huaizu Jiang, Jingdong Wang, Zejian Yuan, Yang Wu, Nanning Zheng, Shipeng Li*
29. Revisiting Depth Layers from Occlusions, *Adarsh Kowdle, Andrew Gallagher, Tsuhan Chen*
30. Hierarchical Video Representation with Trajectory Binary Partition Tree, *Guillem Palou, Philippe Salembier*
31. Discriminative Subspace Clustering, *Vasileios Zografos, Liam Ellis, Rudolf Mester*
32. PISA: Pixelwise Image Saliency by Aggregating Complementary Appearance Contrast Measures with Spatial Priors, *Keyang Shi, Keze Wang, Jiangbo Lu, Liang Lin*
33. Boundary Detection Benchmarking: Beyond F-Measures, *Xiaodi Hou, Alan Yuille, Christof Koch*
34. Measures and Meta-Measures for the Supervised Evaluation of Image Segmentation, *Jordi Pont-Tuset, Ferran Marques*
35. Multi-resolution Shape Analysis via Non-Euclidean Wavelets: Applications to Mesh Segmentation and Surface Alignment Problems, *Won Hwa Kim, Moo K. Chung, Vikas Singh*
36. Robust Estimation of Nonrigid Transformation for Point Set Registration, *Jiayi Ma, Ji Zhao, Jinwen Tian, Zhuowen Tu, Alan L. Yuille*
37. Efficient Computation of Shortest Path-Concavity for 3D Meshes, *Henrik Zimmer, Marcel Campen, Leif Kobbelt*
38. Boundary Cues for 3D Object Shape Recovery, *Kevin Karsch, Zicheng Liao, Jason Rock, Jonathan T. Barron, Derek Hoiem*
39. A Linear Approach to Matching Cuboids in RGBD Images, *Hao Jiang, Jianxiong Xiao*

1445–1525 Spotlight 2D: Motion & Medical Imaging (Oregon Ballroom 203-204)

Chairs : Leo Grady *(HeartFlow, Inc.)*
Vincent Lepetit *(EPFL)*

Format (1 min. poster spotlight)

1. Blind Deconvolution of Widefield Fluorescence Microscopic Data by Regularization of the Optical Transfer Function (OTF), *Margret Keuper, Thorsten Schmidt, Maja Temerinac-Ott, Jan Padeken, Patrick Heun, Olaf Ronneberger, Thomas Brox*
2. Image Understanding from Experts' Eyes by Modeling Perceptual Skill of Diagnostic Reasoning Processes, *Rui Li, Pengcheng Shi, Anne R. Haake*
3. Adaptive Compressed Tomography Sensing, *Oren Barkan, Jonathan Weill, Amir Averbuch, Shai Dekel*
4. Classification of Tumor Histology via Morphometric Context, *Hang Chang, Alexander Borowsky, Paul Spellman, Bahram Parvin*

5. Efficient 3D Endfiring TRUS Prostate Segmentation with Globally Optimized Rotational Symmetry, *Jing Yuan, Wu Qiu, Eranga Ukwatta, Martin Rajchl, Xue-Cheng Tai, Aaron Fenster*
6. Graph-Based Optimization with Tubularity Markov Tree for 3D Vessel Segmentation, *Ning Zhu, Albert C.S. Chung*
7. Prostate Segmentation in CT Images via Spatial-Constrained Transductive Lasso, *Yinghuan Shi, Shu Liao, Yaozong Gao, Daoqiang Zhang, Yang Gao, Dinggang Shen*
8. Area Preserving Brain Mapping, *Zhengyu Su, Wei Zeng, Rui Shi, Yalin Wang, Jian Sun, Xianfeng Gu*
9. Discriminative Brain Effective Connectivity Analysis for Alzheimer's Disease: A Kernel Learning Approach upon Sparse Gaussian Bayesian Network, *Luping Zhou, Lei Wang, Lingqiao Liu, Philip Ogunbona, Dinggang Shen*
10. Compressible Motion Fields, *Giuseppe Ottaviano, Pushmeet Kohli*
11. Fast Rigid Motion Segmentation via Incrementally-Complex Local Models, *Fernando Flores-Mangas, Allan D. Jepson*
12. Determining Motion Directly from Normal Flows Upon the Use of a Spherical Eye Platform, *Tak-Wai Hui, Ronald Chung*
13. Correspondence-Less Non-rigid Registration of Triangular Surface Meshes, *Zsolt Sánta, Zoltan Kato*
14. Video Editing with Temporal, Spatial and Appearance Consistency, *Xiaojie Guo, Xiaochun Cao, Xiaowu Chen, Yi Ma*
15. Correlation Filters for Object Alignment, *Vishnu Naresh Boddeti, Takeo Kanade, B.V.K. Vijaya Kumar*
16. Plane-Based Content-Preserving Warps for Video Stabilization, *Zihan Zhou, Hailin Jin, Yi Ma*
17. Deformable Spatial Pyramid Matching for Fast Dense Correspondences, *Jaechul Kim, Ce Liu, Fei Sha, Kristen Grauman*
18. The Generalized Laplacian Distance and Its Applications for Visual Matching, *Elhanan Elboher, Michael Werman, Yacov Hel-Or*
19. Groupwise Registration via Graph Shrinkage on the Image Manifold, *Shihui Ying, Guorong Wu, Qian Wang, Dinggang Shen*
20. FAsT-Match: Fast Affine Template Matching, *Simon Korman, Daniel Reichman, Gilad Tsur, Shai Avidan*
21. As-Projective-As-Possible Image Stitching with Moving DLT, *Julio Zaragoza, Tat-Jun Chin, Michael S. Brown, David Suter*
22. Real-Time Model-Based Rigid Object Pose Estimation and Tracking Combining Dense and Sparse Visual Cues, *Karl Pauwels, Leonardo Rubio, Javier Díaz, Eduardo Ros*
23. Minimum Uncertainty Gap for Robust Visual Tracking, *Junseok Kwon, Kyoung Mu Lee*
24. Part-Based Visual Tracking with Online Latent Structural Learning, *Rui Yao, Qinfeng Shi, Chunhua Shen, Yanning Zhang, Anton van den Hengel*
25. Least Soft-Threshold Squares Tracking, *Dong Wang, Huchuan Lu, Ming-Hsuan Yang*
26. Self-Paced Learning for Long-Term Tracking, *James Steven Supančič III, Deva Ramanan*
27. Multi-target Tracking by Rank-1 Tensor Approximation, *Xinchu Shi, Haibin Ling, Junliang Xing, Weiming Hu*
28. Robust Real-Time Tracking of Multiple Objects by Volumetric Mass Densities, *Horst Possegger, Sabine Sternig, Thomas Mauthner, Peter M. Roth, Horst Bischof*
29. Information Consensus for Distributed Multi-target Tracking, *Ahmed T. Kamal, Jay A. Farrell, Amit K. Roy-Chowdhury*
30. Online Object Tracking: A Benchmark, *Yi Wu, Jongwoo Lim, Ming-Hsuan Yang*
31. Learning Compact Binary Codes for Visual Tracking, *Xi Li, Chunhua Shen, Anthony Dick, Anton van den Hengel*
32. Visual Tracking via Locality Sensitive Histograms, *Shengfeng He, Qingxiong Yang, Rynson W.H. Lau, Jiang Wang, Ming-Hsuan Yang*
33. Optical Flow Estimation Using Laplacian Mesh Energy, *Wenbin Li, Darren Cosker, Matthew Brown, Rui Tang*
34. Large Displacement Optical Flow from Nearest Neighbor Fields, *Zhuoyuan Chen, Hailin Jin, Zhe Lin, Scott Cohen, Ying Wu*
35. A Fully-Connected Layered Model of Foreground and Background Flow, *Deqing Sun, Jonas Wulff, Erik B. Sudderth, Hanspeter Pfister, Michael J. Black*

1530–1545 **Awards** (Oregon Ballroom 201-202)

1545–1730 **Exhibits** (Exhibit Halls A-A1)

- Same as Tuesday morning Exhibits (see pg. 21)

1545–1730 **Demos** (Exhibit Halls A-A1)

- SLAM++ Simultaneous Localization and Mapping at the Level of Objects, *Renato F. Salas-Moreno, Richard Newcombe, Hauke Stradstaad, Paul H. Kelly, Andrew J. Davison (Imperial College London)*
- Homography-Based Reflection Removal Specialized for Object Recognition by Using Mobile Platform, *Po-Shen Lee, Richard E. Ladner (Univ. of Washington)*
- Robust Real-Time Camera Tracking for Dynamic Scenes, *Wei Tan, Zilong Dong, Haomin Liu, Guofeng Zhang, Hujun Bao (Zhejiang Univ.)*
- Robot Arm Controlled Dynamic Field View Expansion of the Endoscope Video, *Atul Kumar, Yen-Yu Wang, Kai-Che Liu, Anant S. Vemuri, Ming-Chou Ku, Chi-Hsiang Wu, Hurng-Sheng Wu (Asian Institute of TeleSurgery & Chang Bing Show Chwan Memorial Hospital)*

1545–1730 **Poster Session** (Exhibit Halls A-A1)

Posters for Wednesday Aftenoon Papers & Spotlights (poster location layout is on the inside back cover).

Refreshments served the first 30 minutes.

1730–1900 **Reception** (Exhibit Hall B)

Thursday, June 27

0730–0830 Breakfast (Exhibit Hall B)

0730–1730 Registration (Pre-function A)

0730–1730 Computer Room (A102)

0830–0945 Oral 3A: Video
(Oregon Ballroom 201-202)

Chairs : Irfan Essa *(Georgia Tech)*
Ivan Laptev *(INRIA)*

Format (13 min. for presentation + 2 min. for questions)

1. Event Retrieval in Large Video Collections with Circulant Temporal Encoding, *Jérôme Revaud, Matthijs Douze, Cordelia Schmid, Hervé Jégou*
2. Cumulative Attribute Space for Age and Crowd Density Estimation, *Ke Chen, Shaogang Gong, Tao Xiang, Chen Change Loy*
3. Social Role Discovery in Human Events, *Vignesh Ramanathan, Bangpeng Yao, Li Fei-Fei*
4. Discriminative Segment Annotation in Weakly Labeled Video, *Kevin Tang, Rahul Sukthankar, Jay Yagnik, Li Fei-Fei*
5. Context-Aware Modeling and Recognition of Activities in Video, *Yingying Zhu, Nandita M. Nayak, Amit K. Roy-Chowdhury*

0830–0945 Oral 3B: Geometry & Physics (& Medical) (Oregon Ballroom 203-204)

Chairs : Kyros Kutulakos *(Univ. of Toronto)*
Ko Nishino *(Drexel Univ.)*

Format (13 min. for presentation + 2 min. for questions)

1. Underwater Camera Calibration Using Wavelength Triangulation, *Timothy Yau, Minglun Gong, Yee-Hong Yang*
2. Reconstructing Gas Flows Using Light-Path Approximation, *Yu Ji, Jinwei Ye, Jingyi Yu*
3. Photometric Ambient Occlusion, *Daniel Hauagge, Scott Wehrwein, Kavita Bala, Noah Snavely*
4. What Object Motion Reveals About Shape with Unknown BRDF and Lighting, *Manmohan Chandraker, Dikpal Reddy, Yizhou Wang, Ravi Ramamoorthi*
5. Hyperbolic Harmonic Mapping for Constrained Brain Surface Registration, *Rui Shi, Wei Zeng, Zhengyu Su, Hanna Damasio, Zhonglin Lu, Yalin Wang, Shing-Tung Yau, Xianfeng Gu*

0945–1015 Spotlight 3A: Video Analysis
(Oregon Ballroom 201-202)

Chairs : Silvio Savarese *(Univ. of Michigan)*
Cordelia Schmid *(INRIA)*

Format (1 min. poster spotlight)

1. Crossing the Line: Crowd Counting by Integer Programming with Local Features, *Zheng Ma, Antoni B. Chan*
2. Multi-source Multi-scale Counting in Extremely Dense Crowd Images, *Haroon Idrees, Imran Saleemi, Cody Seibert, Mubarak Shah*
3. Better Exploiting Motion for Better Action Recognition, *Mihir Jain, Hervé Jégou, Patrick Bouthemy*
4. Detection of Manipulation Action Consequences (MAC), *Yezhou Yang, Cornelia Fermüller, Yiannis Aloimonos*
5. Representing Videos Using Mid-level Discriminative Patches, *Arpit Jain, Abhinav Gupta, Mikel Rodriguez, Larry S. Davis*
6. Modeling Actions through State Changes, *Alireza Fathi, James M. Rehg*
7. Recognizing Activities via Bag of Words for Attribute Dynamics, *Weixin Li, Qian Yu, Harpreet Sawhney, Nuno Vasconcelos*
8. Sampling Strategies for Real-Time Action Recognition, *Feng Shi, Emil Petriu, Robert Laganière*
9. Dynamic Scene Classification: Learning Motion Descriptors with Slow Features Analysis, *Christian Thériault, Nicolas Thome, Matthieu Cord*
10. Online Dominant and Anomalous Behavior Detection in Videos, *Mehrsan Javan Roshtkhari, Martin D. Levine*
11. Augmenting Bag-of-Words: Data-Driven Discovery of Temporal and Structural Information for Activity Recognition, *Vinay Bettadapura, Grant Schindler, Thomas Ploetz, Irfan Essa*

12. Complex Event Detection via Multi-source Video Attributes, *Zhigang Ma, Yi Yang, Zhongwen Xu, Shuicheng Yan, Nicu Sebe, Alexander G. Hauptmann*
13. A Thousand Frames in Just a Few Words: Lingual Description of Videos through Latent Topics and Sparse Object Stitching, *Pradipto Das, Chenliang Xu, Richard F. Doell, Jason J. Corso*
14. Spatiotemporal Deformable Part Models for Action Detection, *Yicong Tian, Rahul Sukthankar, Mubarak Shah*
15. Poselet Key-Framing: A Model for Human Activity Recognition, *Michalis Raptis, Leonid Sigal*
16. Recognize Human Activities from Partially Observed Videos, *Yu Cao, Daniel Barrett, Andrei Barbu, Siddharth Narayanaswamy, Haonan Yu, Aaron Michaux, Yuewei Lin, Sven Dickinson, Jeffrey Mark Siskind, Song Wang*
17. Event Recognition in Videos by Learning from Heterogeneous Web Sources, *Lin Chen, Lixin Duan, Dong Xu*
18. Motionlets: Mid-level 3D Parts for Human Motion Recognition, *LiMin Wang, Yu Qiao, Xiaoou Tang*
19. Multi-agent Event Detection: Localization and Role Assignment, *Suha Kwak, Bohyung Han, Joon Hee Han*
20. Cross-View Action Recognition via a Continuous Virtual Path, *Zhong Zhang, Chunheng Wang, Baihua Xiao, Wen Zhou, Shuang Liu, Cunzhao Shi*
21. Large-Scale Video Summarization Using Web-Image Priors, *Aditya Khosla, Raffay Hamid, Chih-Jen Lin, Neel Sundaresan*
22. Representing and Discovering Adversarial Team Behaviors Using Player Roles, *Patrick Lucey, Alina Bialkowski, Peter Carr, Stuart Morgan, Iain Matthews, Yaser Sheikh*
23. Story-Driven Summarization for Egocentric Video, *Zheng Lu, Kristen Grauman*
24. Finding Group Interactions in Social Clutter, *Ruonan Li, Parker Porfilio, Todd Zickler*
25. First-Person Activity Recognition: What Are They Doing to Me?, *Michael S. Ryoo, Larry Matthies*
26. Joint Sparsity-Based Representation and Analysis of Unconstrained Activities, *Raghuraman Gopalan*
27. Motion Estimation for Self-Driving Cars with a Generalized Camera, *Gim Hee Lee, Friedrich Fraundorfer, Marc Pollefeys*

0945–1015 Spotlight 3B: Features & Contours
(Oregon Ballroom 203-204)

Chairs : Svetlana Lazebnik *(UIUC)*
Yoichi Sato *(Univ. of Tokyo)*

Format (1 min. poster spotlight)

1. Learning Separable Filters, *Roberto Rigamonti, Amos Sironi, Vincent Lepetit, Pascal Fua*
2. Robust Feature Matching with Alternate Hough and Inverted Hough Transforms, *Hsin-Yi Chen, Yen-Yu Lin, Bing-Yu Chen*
3. SWIGS: A Swift Guided Sampling Method, *Victor Fragoso, Matthew Turk*
4. Learning Multiple Non-linear Sub-spaces Using K-RBMs, *Siddhartha Chandra, Shailesh Kumar, C.V. Jawahar*
5. Light Field Distortion Feature for Transparent Object Recognition, *Kazuki Maeno, Hajime Nagahara, Atsushi Shimada, Rin-ichiro Taniguchi*
6. From Local Similarity to Global Coding: An Application to Image Classification, *Amirreza Shaban, Hamid R. Rabiee, Mehrdad Farajtabar, Marjan Ghazvininejad*
7. Joint Spectral Correspondence for Disparate Image Matching, *Mayank Bansal, Kostas Daniilidis*
8. Efficient Color Boundary Detection with Color-Opponent Mechanisms, *Kaifu Yang, Shaobing Gao, Chaoyi Li, Yongjie Li*
9. Winding Number for Region-Boundary Consistent Salient Contour Extraction, *Yansheng Ming, Hongdong Li, Xuming He*
10. Supervised Semantic Gradient Extraction Using Linear-Time Optimization, *Shulin (Lynn) Yang, Jue Wang, Linda Shapiro*
11. Spatio-temporal Depth Cuboid Similarity Feature for Activity Recognition Using Depth Camera, *Lu Xia, J.K. Aggarwal*
12. Sparse Quantization for Patch Description, *Xavier Boix, Michael Gygli, Gemma Roig, Luc Van Gool*
13. Evaluation of Color STIPs for Human Action Recognition, *Ivo Everts, Jan C. van Gemert, Theo Gevers*
14. Supervised Kernel Descriptors for Visual Recognition, *Peng Wang, Jingdong Wang, Gang Zeng, Weiwei Xu, Hongbin Zha, Shipeng Li*

15. Discriminative Color Descriptors, *Rahat Khan, Joost van de Weijer, Fahad Shahbaz Khan, Damien Muselet, Christophe Ducottet, Cecile Barat*
16. Boosting Binary Keypoint Descriptors, *Tomasz Trzcinski, Mario Christoudias, Pascal Fua, Vincent Lepetit*
17. Exploring Weak Stabilization for Motion Feature Extraction, *Dennis Park, C. Lawrence Zitnick, Deva Ramanan, Piotr Dollár*
18. Dense Segmentation-Aware Descriptors, *Eduard Trulls, Iasonas Kokkinos, Alberto Sanfeliu, Francesc Moreno-Noguer*
19. Keypoints from Symmetries by Wave Propagation, *Samuele Salti, Alessandro Lanza, Luigi Di Stefano*
20. Graph Matching with Anchor Nodes: A Learning Approach, *Nan Hu, Raif M. Rustamov, Leonidas Guibas*
21. Dense Non-rigid Point-Matching Using Random Projections, *Raffay Hamid, Dennis Decoste, Chih-Jen Lin*
22. Deformable Graph Matching, *Feng Zhou, Fernando De la Torre*
23. Scene Coordinate Regression Forests for Camera Relocalization in RGB-D Images, *Jamie Shotton, Ben Glocker, Christopher Zach, Shahram Izadi, Antonio Criminisi, Andrew Fitzgibbon*
24. *K*-Means Hashing: An Affinity-Preserving Quantization Method for Learning Binary Compact Codes, *Kaiming He, Fang Wen, Jian Sun*
25. Optimized Product Quantization for Approximate Nearest Neighbor Search, *Tiezheng Ge, Kaiming He, Qifa Ke, Jian Sun*
26. A Non-parametric Framework for Document Bleed-Through Removal, *Róisín Rowley-Brooke, François Pitié, Anil Kokaram*
27. Scene Text Recognition Using Part-Based Tree-Structured Character Detection, *Cunzhao Shi, Chunheng Wang, Baihua Xiao, Yang Zhang, Song Gao, Zhong Zhang*
28. Active Contours with Group Similarity, *Xiaowei Zhou, Xiaojie Huang, James S. Duncan, Weichuan Yu*
29. Accurate and Robust Registration of Nonrigid Surface Using Hierarchical Statistical Shape Model, *Hidekata Hontani, Yuto Tsunekawa, Yoshihide Sawada*

1015–1200 **Exhibits** (Exhibit Halls A-A1)

- Same as Tuesday morning Exhibits (see pg. 21)

1015–1200 **Demos** (Exhibit Halls A-A1)

- Real Time RGB-D Based Multi-Person Tracking from a Head Mounted Camera, *Omid Hosseini Jafari, Dennis Mitzel, Bastian Leibe (RWTH Aachen University)*
- Model-Based 3D Torso Pose Estimation from RGB-D Data, *Markos Sigalas, Maria Pateraki, Panos Trahanias (Foundation for Research and Technology & Univ. of Crete)*
- Capture and Animation of 3D Human Body *Yinpeng Chen, Zicheng Liu, Zhengyou Zhang (Microsoft Research)*
- Relative Attributes for Enhanced Human-Machine Communication, *Naman Agrawal, Arijit Biswas, Adriana Kovashka, Kristen Grauman, Devi Parikh (Virginia Tech, Univ. of Maryland, & Univ. of Texas at Austin)*

1015–1200 **Poster Session** (Exhibit Halls A-A1)

Posters for Thursday Morning Papers & Spotlights (poster location layout is on the inside back cover).

Refreshments served the first 30 minutes.

1200–1330 **Lunch** (Exhibit Hall B)

1330–1445 Orals 3C: Context & Scenes (& ANN)
(Oregon Ballroom 201-202)

Chairs : Tamara Berg *(Stony Brook Univ.)*
Fei-Fei Li *(Stanford Univ.)*

Format (13 min. for presentation + 2 min. for questions)

1. Spatial Inference Machines, *Roman Shapovalov, Dmitry Vetrov, Pushmeet Kohli*
2. Hallucinated Humans as the Hidden Context for Labeling 3D Scenes, *Yun Jiang, Hema Koppula, Ashutosh Saxena*
3. Finding Things: Image Parsing with Regions and Per-Exemplar Detectors, *Joseph Tighe, Svetlana Lazebnik*
4. Bringing Semantics into Focus Using Visual Abstraction, *C. Lawrence Zitnick, Devi Parikh*
5. Cartesian K-Means, *Mohammad Norouzi, David J. Fleet*

1330–1445 Orals 3D: Faces, People, & Crowds
(Oregon Ballroom 203-204)

Chairs : Erik Learned-Miller *(Univ. of Massachusetts)*
Bernt Schiele *(Max Planck Institute)*

Format (13 min. for presentation + 2 min. for questions)

1. Blessing of Dimensionality: High-Dimensional Feature and Its Efficient Compression for Face Verification, *Dong Chen, Xudong Cao, Fang Wen, Jian Sun*
2. Robust Multi-resolution Pedestrian Detection in Traffic Scenes, *Junjie Yan, Xucong Zhang, Zhen Lei, Shengcai Liao, Stan Z. Li*
3. Human Pose Estimation Using Body Parts Dependent Joint Regressors, *Matthias Dantone, Juergen Gall, Christian Leistner, Luc Van Gool*
4. Measuring Crowd Collectiveness, *Bolei Zhou, Xiaoou Tang, Xiaogang Wang*
5. Lost! Leveraging the Crowd for Probabilistic Visual Self-Localization, *Marcus A. Brubaker, Andreas Geiger, Raquel Urtasun*

1445–1525 Spotlight 3C: Objects & Scenes
(Oregon Ballroom 201-202)

Chairs : Alexander Berg *(Stony Brook Univ.)*
Vittorio Ferrari *(Univ. of Edinburgh)*

Format (1 min. poster spotlight)

1. Manhattan Junction Catalogue for Spatial Reasoning of Indoor Scenes, *Srikumar Ramalingam, Jaishanker K. Pillai, Arpit Jain, Yuichi Taguchi*
2. Tensor-Based High-Order Semantic Relation Transfer for Semantic Scene Segmentation, *Heesoo Myeong, Kyoung Mu Lee*
3. Geometric Context from Videos, *S. Hussain Raza, Matthias Grundmann, Irfan Essa*
4. It's Not Polite to Point: Describing People with Uncertain Attributes, *Amir Sadovnik, Andrew Gallagher, Tsuhan Chen*
5. Heterogeneous Visual Features Fusion via Sparse Multimodal Machine, *Hua Wang, Feiping Nie, Heng Huang, Chris Ding*
6. A Max-Margin Riffled Independence Model for Image Tag Ranking, *Tian Lan, Greg Mori*
7. Weakly Supervised Learning for Attribute Localization in Outdoor Scenes, *Shuo Wang, Jungseock Joo, Yizhou Wang, Song-Chun Zhu*
8. Scene Parsing by Integrating Function, Geometry and Appearance Models, *Yibiao Zhao, Song-Chun Zhu*
9. Beyond Point Clouds: Scene Understanding by Reasoning Geometry and Physics, *Bo Zheng, Yibiao Zhao, Joey C. Yu, Katsushi Ikeuchi, Song-Chun Zhu*
10. Label Propagation from ImageNet to 3D Point Clouds, *Yan Wang, Rongrong Ji, Shih-Fu Chang*
11. Analyzing Semantic Segmentation Using Hybrid Human-Machine CRFs, *Roozbeh Mottaghi, Sanja Fidler, Jian Yao, Raquel Urtasun, Devi Parikh*
12. Nonparametric Scene Parsing with Adaptive Feature Relevance and Semantic Context, *Gautam Singh, Jana Kosecka*
13. Sketch Tokens: A Learned Mid-level Representation for Contour and Object Detection, *Joseph J. Lim, C. Lawrence Zitnick, Piotr Dollár*
14. Saliency Detection via Graph-Based Manifold Ranking, *Chuan Yang, Lihe Zhang, Huchuan Lu, Xiang Ruan, Ming-Hsuan Yang*

15. Maximum Cohesive Grid of Superpixels for Fast Object Localization, *Liang Li, Wei Feng, Liang Wan, Jiawan Zhang*
16. Accurate Localization of 3D Objects from RGB-D Data Using Segmentation Hypotheses, *Byung-soo Kim, Shili Xu, Silvio Savarese*
17. Efficient Maximum Appearance Search for Large-Scale Object Detection, *Qiang Chen, Zheng Song, Rogerio Feris, Ankur Datta, Liangliang Cao, Zhongyang Huang, Shuicheng Yan*
18. Single-Pedestrian Detection Aided by Multi-pedestrian Detection, *Wanli Ouyang, Xiaogang Wang*
19. Robust Object Co-detection, *Xin Guo, Dong Liu, Brendan Jou, Mojun Zhu, Anni Cai, Shih-Fu Chang*
20. Integrating Grammar and Segmentation for Human Pose Estimation, *Brandon Rothrock, Seyoung Park, Song-Chun Zhu*
21. Modeling Mutual Visibility Relationship in Pedestrian Detection, *Wanli Ouyang, Xingyu Zeng, Xiaogang Wang*
22. Learning to Detect Partially Overlapping Instances, *Carlos Arteta, Victor Lempitsky, J. Alison Noble, Andrew Zisserman*
23. Looking Beyond the Image: Unsupervised Learning for Object Saliency and Detection, *Parthipan Siva, Chris Russell, Tao Xiang, Lourdes Agapito*
24. Histograms of Sparse Codes for Object Detection, *Xiaofeng Ren, Deva Ramanan*
25. Efficient Detector Adaptation for Object Detection in a Video, *Pramod Sharma, Ram Nevatia*
26. A Lazy Man's Approach to Benchmarking: Semisupervised Classifier Evaluation and Recalibration, *Peter Welinder, Max Welling, Pietro Perona*
27. Fast Object Detection with Entropy-Driven Evaluation, *Raphael Sznitman, Carlos Becker, François Fleuret, Pascal Fua*
28. Discriminatively Trained And-Or Tree Models for Object Detection, *Xi Song, Tianfu Wu, Yunde Jia, Song-Chun Zhu*
29. Occlusion Patterns for Object Class Detection, *Bojan Pepikj, Michael Stark, Peter Gehler, Bernt Schiele*
30. Bottom-Up Segmentation for Top-Down Detection, *Sanja Fidler, Roozbeh Mottaghi, Alan Yuille, Raquel Urtasun*
31. Composite Statistical Inference for Semantic Segmentation, *Fuxin Li, Joao Carreira, Guy Lebanon, Cristian Sminchisescu*
32. Multi-attribute Queries: To Merge or Not to Merge?, *Mohammad Rastegari, Ali Diba, Devi Parikh, Ali Farhadi*
33. Local Fisher Discriminant Analysis for Pedestrian Re-identification, *Sateesh Pedagadi, James Orwell, Sergio Velastin, Boghos Boghossian*
34. Explicit Occlusion Modeling for 3D Object Class Representations, *M. Zeeshan Zia, Michael Stark, Konrad Schindler*
35. Incorporating Structural Alternatives and Sharing into Hierarchy for Multiclass Object Recognition and Detection, *Xiaolong Wang, Liang Lin, Lichao Huang, Shuicheng Yan*
36. Articulated Pose Estimation Using Discriminative Armlet Classifiers, *Georgia Gkioxari, Pablo Arbeláez, Lubomir Bourdev, Jitendra Malik*
37. Sparse Output Coding for Large-Scale Visual Recognition, *Bin Zhao, Eric P. Xing*
38. From *N* to *N*+1: Multiclass Transfer Incremental Learning, *Ilja Kuzborskij, Francesco Orabona, Barbara Caputo*
39. What's in a Name? First Names as Facial Attributes, *Huizhong Chen, Andrew C. Gallagher, Bernd Girod*
40. Kernel Null Space Methods for Novelty Detection, *Paul Bodesheim, Alexander Freytag, Erik Rodner, Michael Kemmler, Joachim Denzler*

1445–1525 Spotlight 3D: People & Faces
(Oregon Ballroom 203-204)

Chairs : Terry Boult *(Univ. of Colorado, Colorado Springs)*
Lihi Zelnik-Manor *(Technion)*

Format (1 min. poster spotlight)

1. Expressive Visual Text-to-Speech Using Active Appearance Models, *Robert Anderson, Björn Stenger, Vincent Wan, Roberto Cipolla*
2. Computationally Efficient Regression on a Dependency Graph for Human Pose Estimation, *Kota Hara, Rama Chellappa*
3. Hollywood 3D: Recognizing Actions in 3D Natural Scenes, *Simon Hadfield, Richard Bowden*
4. 3D Visual Proxemics: Recognizing Human Interactions in 3D from a Single Image, *Ishani Chakraborty, Hui Cheng, Omar Javed*

5. Decoding Children's Social Behavior, *James M. Rehg, Gregory D. Abowd, Agata Rozga, Mario Romero, Mark A. Clements, Stan Sclaroff, Irfan Essa, Opal Y. Ousley, Yin Li, Chanho Kim, Hrishikesh Rao, Jonathan C. Kim, Liliana Lo Presti, Jianming Zhang, Denis Lantsman, Jonathan Bidwell, Zhefan Ye*
6. Capturing Complex Spatio-temporal Relations among Facial Muscles for Facial Expression Recognition, *Ziheng Wang, Shangfei Wang, Qiang Ji*
7. Detecting Pulse from Head Motions in Video, *Guha Balakrishnan, Fredo Durand, John Guttag*
8. Towards Contactless, Low-Cost and Accurate 3D Fingerprint Identification, *Ajay Kumar, Cyril Kwong*
9. Robust Discriminative Response Map Fitting with Constrained Local Models, *Akshay Asthana, Stefanos Zafeiriou, Shiyang Cheng, Maja Pantic*
10. Facial Feature Tracking Under Varying Facial Expressions and Face Poses Based on Restricted Boltzmann Machines, *Yue Wu, Zuoguan Wang, Qiang Ji*
11. Detecting and Aligning Faces by Image Retrieval, *Xiaohui Shen, Zhe Lin, Jonathan Brandt, Ying Wu*
12. Learning SURF Cascade for Fast and Accurate Object Detection, *Jianguo Li, Yimin Zhang*
13. Deep Convolutional Network Cascade for Facial Point Detection, *Yi Sun, Xiaogang Wang, Xiaoou Tang*
14. Exemplar-Based Face Parsing, *Brandon M. Smith, Li Zhang, Jonathan Brandt, Zhe Lin, Jianchao Yang*
15. Graph-Laplacian PCA: Closed-Form Solution and Robustness, *Bo Jiang, Chris Ding, Bin Luo, Jin Tang*
16. Probabilistic Elastic Matching for Pose Variant Face Verification, *Haoxiang Li, Gang Hua, Zhe Lin, Jonathan Brandt, Jianchao Yang*
17. Constrained Clustering and Its Application to Face Clustering in Videos, *Baoyuan Wu, Yifan Zhang, Bao-Gang Hu, Qiang Ji*
18. Selective Transfer Machine for Personalized Facial Action Unit Detection, *Wen-Sheng Chu, Fernando De la Torre, Jeffery F. Cohn*
19. The SVM-Minus Similarity Score for Video Face Recognition, *Lior Wolf, Noga Levy*
20. Face Recognition in Movie Trailers via Mean Sequence Sparse Representation-Based Classification, *Enrique G. Ortiz, Alan Wright, Mubarak Shah*
21. Towards Pose Robust Face Recognition, *Dong Yi, Zhen Lei, Stan Z. Li*
22. Single-Sample Face Recognition with Image Corruption and Misalignment via Sparse Illumination Transfer, *Liansheng Zhuang, Allen Y. Yang, Zihan Zhou, S. Shankar Sastry, Yi Ma*
23. Fusing Robust Face Region Descriptors via Multiple Metric Learning for Face Recognition in the Wild, *Zhen Cui, Wen Li, Dong Xu, Shiguang Shan, Xilin Chen*
24. Action Recognition by Hierarchical Sequence Summarization, *Yale Song, Louis-Philippe Morency, Randall Davis*
25. Pixel-Level Hand Detection in Ego-centric Videos, *Cheng Li, Kris M. Kitani*
26. Human Pose Estimation Using a Joint Pixel-wise and Part-wise Formulation, *Ľubor Ladický, Philip H.S. Torr, Andrew Zisserman*
27. Unsupervised Salience Learning for Person Re-identification, *Rui Zhao, Wanli Ouyang, Xiaogang Wang*
28. Locally Aligned Feature Transforms across Views, *Wei Li, Xiaogang Wang*
29. Semi-supervised Learning with Constraints for Person Identification in Multimedia Data, *Martin Bäuml, Makarand Tapaswi, Rainer Stiefelhagen*
30. Learning Locally-Adaptive Decision Functions for Person Verification, *Zhen Li, Shiyu Chang, Feng Liang, Thomas S. Huang, Liangliang Cao, John R. Smith*
31. 3D Pictorial Structures for Multiple View Articulated Pose Estimation, *Magnus Burenius, Josephine Sullivan, Stefan Carlsson*
32. Pedestrian Detection with Unsupervised Multi-stage Feature Learning, *Pierre Sermanet, Koray Kavukcuoglu, Soumith Chintala, Yann Lecun*
33. A Joint Model for 2D and 3D Pose Estimation from a Single Image, *Edgar Simo-Serra, Ariadna Quattoni, Carme Torras, Francesc Moreno-Noguer*
34. Unconstrained Monocular 3D Human Pose Estimation by Action Detection and Cross-Modality Regression Forest, *Tsz-Ho Yu, Tae-Kyun Kim, Roberto Cipolla*

35. Hypergraphs for Joint Multi-view Reconstruction and Multi-object Tracking, *Martin Hofmann, Daniel Wolf, Gerhard Rigoll*
36. Tracking People and Their Objects, *Tobias Baumgartner, Dennis Mitzel, Bastian Leibe*
37. Seeking the Strongest Rigid Detector, *Rodrigo Benenson, Markus Mathias, Tinne Tuytelaars, Luc Van Gool*
38. MODEC: Multimodal Decomposable Models for Human Pose Estimation, *Ben Sapp, Ben Taskar*
39. Detection- and Trajectory-Level Exclusion in Multiple Object Tracking, *Anton Milan, Konrad Schindler, Stefan Roth*
40. Optimized Pedestrian Detection for Multiple and Occluded People, *Sitapa Rujikietgumjorn, Robert T. Collins*
41. Long-Term Occupancy Analysis Using Graph-Based Optimisation in Thermal Imagery, *Rikke Gade, Anders Jørgensen, Thomas B. Moeslund*
42. Detecting and Naming Actors in Movies Using Generative Appearance Models, *Vineet Gandhi, Remi Ronfard*
43. Harry Potter's Marauder's Map: Localizing and Tracking Multiple Persons-of-Interest by Nonnegative Discretization, *Shoou-I Yu, Yi Yang, Alexander Hauptmann*
44. Improving an Object Detector and Extracting Regions Using Superpixels, *Guang Shu, Afshin Dehghan, Mubarak Shah*
45. Tracking Human Pose by Tracking Symmetric Parts, *Varun Ramakrishna, Takeo Kanade, Yaser Sheikh*

1525–1730 Exhibits (Exhibit Halls A-A1)

- Same as Tuesday morning Exhibits (see pg. 21)

1525–1730 Demos (Exhibit Halls A-A1)

- Software Video Image Stabilizer, *Rami Hagege, Joseph M. Francos, Amir Francos (Sightec Perception Technologies)*
- Audio and Image Watermarking, *Adnan Alattar (Digimarc Corporation)*
- Continuous 3D Face Authentication using RGB-D Cameras, *Mauricio Pamplona Segundo, Sudeep Sarkar, Dmitry Goldgof, Luciano Silva, Olga Bellon (Univ. of South Florida & Univ. Federal do Parana)*

1525–1800 Poster Session (Exhibit Halls A-A1)

Posters for Thursday Aftenoon Papers & Spotlights (poster location layout is on the inside back cover).

Refreshments served the first 30 minutes.

Friday, June 28

0730–0830 Breakfast (Exhibit Hall B)

0730–1730 Registration (Pre-function A)

0730–1730 Computer Room (A102)

1200–1330 Lunch (Exhibit Hall B)

Ground Truth - What is a Good Dataset

Organizers: Daniel Kondermann
Carsten Rother
Bernd Jöhne

Location: A105-106

Schedule: Full Day

0815 Welcome

0830 **Invited Talk:** TBA, *Pushmeet Kohli (Microsoft Research Cambridge)*

0900 Moderated Discussion

0920 **Invited Talk:** TBA, *Daniel Burfoot (Harvard Univ.)*

0950 Panel Discussion

1015 Morning Break

1050 **Invited Talk:** TBA, *Daniel Scharstein (Middlebury College)*

1120 Moderated Discussion

1140 Poster Teaser Session

1215 Lunch (provided)

1330 **Invited Talk:** TBA, *Andrew Davison (Imperial College London)*

1400 Moderated Discussion

1420 Poster Session

1. Adapting a Pedestrian Detector by Boosting LDA Exemplar Classifiers, *Jiaolong Xu, David Vázquez, Sebastian Ramos, Antonio M. López, Daniel Ponsa*
2. Generation of Ground Truth for Object Detection While Playing an Online Game: Productive Gaming or Recreational Working?, *Isaak Kavasidis, Concetto Spampinato, Daniela Giordano*
3. iCub World: Friendly Robots Help Building Good Vision Data-Sets, *Sean Ryan Fanello, Carlo Ciliberto, Matteo Santoro, Lorenzo Natale, Giorgio Metta, Lorenzo Rosasco, Francesca Odone*
4. Weakly Supervised Automatic Annotation of Pedestrian Bounding Boxes, *David Vázquez, Jiaolong Xu, Sebastian Ramos, Antonio M. López, Daniel Ponsa*
5. Ground Truth For Pedestrian Analysis and Application to Camera Calibration, *Clement Creusot, Nicolas Courty*
6. 3D Ground-Truth Systems for Object/Human Recognition and Tracking, *Afzal Godil, Roger Bostelman, Kamel Saidi, Will Shackleford, Geraldine Cheok, Michael Shneier, Tsai Hong*
7. A Multi-sensor Traffic Scene Dataset with Omnidirectional Video, *Philipp Koschorrek, Tommaso Piccini, Per Öberg, Michael Felsberg, Lars Nielsen, Rudolf Mester*
8. Challenges of Ground Truth Evaluation of Multi-Target Tracking, *Anton Milan, Konrad Schindler, Stefan Roth*
9. Leveraging Crowdsourced Data for Creating Temporal Segmentation Ground Truths of Subjective Tasks, *Matt Burlick, Olga Koteoglou, Lazaros Karydas, George Kamberov*

1535 Afternoon Break

1600 **Invited Talk:** TBA, *Carl Vondrick (Massachusetts Institute of Technology)*

1630 Moderated Discussion

1650 Closing Remarks

Socially Intelligent Surveillance and Monitoring

Organizers: Vittorio Murino
Marco Cristani
Alessandro Vinciarelli

Location: A107-109

Schedule: Full day

0900 Welcome

0915 **Invited Talk:** Understanding Human Interactions from Videos, *Silvio Savarese (Univ. of Michigan)*

1015 Morning Break

1045 Online Social Behavior Modeling for Multi-Target Tracking, *Shu Zhang, Abir Das, Chong Ding, Amit K. Roy-Chowdhury*

1115 Learning to Detect Carried Objects with Minimal Supervision, *Radu Dondera, Vlad Morariu, Larry S. Davis*

1145 Unsupervised Abnormal Crowd Activity Detection Using Semiparametric Scan Statistic, *Yang Hu, Yangmuzi Zhang, Larry S. Davis*

1215 Lunch (provided)

1400 **Invited Talk:** Context in Video Analysis, *Amit Roy-Chowdhury (Univ. of California, Riverside)*

1500 Using 3D Models to Recognize 2D Faces in the Wild, *Iacopo Masi, Giuseppe Lisanti, Andrew D. Bagdanov, Pietro Pala, Alberto Del Bimbo*

1530 Afternoon Break

1600 Dynamic Multi-Vehicle Detection and Tracking from a Moving Platform, *Chung-Ching Lin, Marilyn Wolf*

1630 MultiClass Object Classiffication in Video Surveillance Systems - An Experimental Study, *Mohamed Elhoseiny, Amr Bakry, Ahmed Elgammal*

1700 Discussion

1715 Closing Remarks

Camera Networks and Wide Area Scene Analysis

Organizers: Faisal Z. Qureshi
Amit K. Roy-Chowdhury
Christian Micheloni
Bi Song

Location: B110-112

Schedule: Half Day - Morning

0830 Welcome

0840 **Keynote Talk:** Smart and Aerial Camera Networks, *Bernhard Rinner (Klagenfurt Univ.)*

0930 Exploring Structural Information and Fusing Multiple Features for Person Re-identification, *Yang Hu, Shengcai Liao,Zhen Lei,Dong Yi,Stan Z. Li*

0950 Grouping Crowd-Sourced Mobile Videos for Cross-Camera Tracking, *Nathan Frey, Matthew Antone*

1010 A Temporal Scheme for Fast Learning of Image-Patch Correspondences in Realistic Multi-camera Setups, *Jens Eisenbach, Christian Conrad, Rudolf Mester*

1030 Morning Break

1045 **Keynote Talk:** Ubiquitous Surveillance: bridging the gap between Mobile Vision and Video Surveillance, *Andrea Prati (Univ. of IUAV)*

1135 Target Trajectory Prediction for Smart Camera Networks, *Vahab Akbarzadeh, Christian Gagné, Marc Parizeau*

1155 Tracking in Wide Area Motion Imagery Using Phase Vector Fields, *Varun Santhaseelan, Vijayan K. Asari*

1215 Tracking People across Multiple Non-Overlapping RGB-D Sensors, *Emilio J. Almazán, Graeme A. Jones*

1235 Concluding Remarks

Analysis and Modeling of Faces and Gestures

Organizers: Matthew Turk
Xiaoou Tang
Kevin W. Bowyer
Yun Raymond Fu
Shuicheng Yan
Shaogang Gong

Location: B113-114

Schedule: Full Day

0830 Welcome

0835 Nonparametric Facial Feature Localization, *Birgi Tamersoy, J. K. Aggarwal, Changbo Hu*

0900 Local Sparse Discriminant Analysis For Robust Visual Classification, *Cuicui Kang, Shengcai Liao, Shiming Xiang, Chunhong Pan*

0925 LGE-KSVD: Flexible Dictionary Learning for Optimized Sparse Representation Classification, *Raymond Ptucha, Andreas Savakis*

0950 Out-of-Sample Embedding for Manifold Learning Applied to Face Recognition, *Fadi Dornaika, Bogdan Raducanu*

1015 Morning Break

1045 **Invited Talk:** IARPA Program, *Mark Burge*

1110 Face Recognition Across Poses Using A Single 3D Reference Model, *Gee-Sern Hsu, Hsiao-Chia Peng*

1135 Bidirectional Warping of Active Appearance Model, *Ali Mollahosseini, Mohammad Mahoor*

1230 Lunch (provided)

1330 Affectiva-MIT Facial Expression Dataset (AM-FED): Naturalistic and Spontaneous Facial Expressions Collected "In-the-Wild", *Daniel McDuff, Rana el Kaliouby, Thibaud Senechal, May Amr, Jeffrey F. Cohn, Rosalind Picard*

1355 Emotional Expression Classification Using Time-Series Kernels, *Andras Lorincz, Laszlo Attila Jeni, Zoltan Szabo, Jeffrey F. Cohn, Takeo Kanade*

1420 A Semi-automatic Methodology for Facial Landmark Annotation, *Christos Sagonas, Georgios Tzimiropoulos, Stefanos Zafeiriou, Maja Pantic*

1445 Evaluating Open-Universe Face Identification on the Web, *Brian C. Becker, Enrique G. Ortiz*

1510 The Power is in Your Hands: 3D Analysis of Active and Passive Hand Gestures under Realistic Conditions, *Eshed Ohn-Bar, Mohan M. Trivedi*

1535 **Best Paper Announcement & Conclusion**

Computational Cameras and Displays

Organizers: Gordon Wetzstein
Amit Agrawal

Location: B115-116

Schedule: Full day

0830 Welcome

0845 **Keynote Talk:** When Does Computational Imaging Improve Performance? *Oliver Cossairt (Northwestern Univ.)*

0945 Papers and Posters Fast Forward

1000 Morning Break

S1: Paper Session (1030–1130)

1030 Projection Based Real-time Material Appearance Manipulation, *Toshiyuki Amano*

1050 Practical Non-linear Photometric Projector Compensation, *Anselm Grundhöfer*

1110 Physical Avatars in a Projector-Camera Tangible User Interface Enhance Quantitative Simulation Analysis and Engagement, *Joshua Nasman, Barbara Cutler*

1130 **Keynote Talk:** Monocentric Based Imaging Optics Design, *Joseph E. Ford (Univ. of California, San Diego)*

1230 Lunch (provided)

S2: Paper Session (1330–1430)

1330 Optical Computing System for Fast Non-uniform Image Deblurring, *Tao Yue, Jinli Suo, Xiangyang Ji, Qionghai Dai*

1350 An Analysis of Focus Sweep for Improved 2D Motion Invariance, *Yosuke Bando*

1410 Design of a Chromatic 3D Camera with an End-to-End Performance Model Approach, *Pauline Trouvè, Frèdèric Champagnat, Guy Le Besnerais, Guillaume Druard, Jèrùme Idier*

P1: Poster Session (1430–1525)

1. Low-Light Scene Color Imaging Based on Luminance Estimation from Near-Infrared Flash Image, *Takeuchi Koichi, Masayuki Tanaka, Masatoshi Okutomi*
2. Mobile Multi-flash Photography, *Xinqing Guo, Zhan Yu, Jingyi Yu*
3. Catadioptric Array Photography for Low Light Imaging, *Zhan Yu, Xinqing Guo, Xiaogang Chen, Jingyi Yu*
4. Motion Streaks - High Speed Motion Capture with Consumer-Grade Cameras, *Xing Chen, Bob Woodham, Wolfgang Heidrich*
5. An Image Transmultiplexing Framework for Computational Cameras, *Rene Teixeira, Kiyoharu Aizawa*
6. Robust Image Rectification for Short-Baseline Linear Camera Arrays, *Gilson Goncalves de Lima, Gabriel Taubin*
7. Spatially Varying Radiometric Calibration for Camera-Display Messaging, *Wenjia Yuan, Kristin Dana, ashwin Ashok, Marco Gruteser, Narayan Mandayam*

1525 Afternoon Break

1545 **Keynote Talk:** Compressive Imaging, *Ashok Veeraraghavan (Rice Univ.)*

1645 **Best Paper Award & Closing Remarks**

Visual Analysis Beyond Semantics

Organizers: Luca Marchesotti
Aude Oliva

Location: B117-119

Schedule: Full Day

0915 Introduction

0935 What Makes a Picture Memorable, *Aude Oliva*

0955 Learning High-Level Photographic Quality, *Luca Marchesotti*

1015 Morning Break

1045 **Invited Talk:** Inferring What's Important in Image Search, *Kristen Grauman (Univ. of Texas at Austin)*

1130 **Invited Talk:** What Will it Look Like If..?, *David Forsyth (Univ. of Illinois at Urbana-Champaign)*

1200 Lunch Break

1330 **Invited Talk:** Computational Graphic Design and Aesthetics, *Aaron Hertzmann (Adobe Research)*

1400 No-Reference Harmony-Guided Quality Assessment, *Christel Chamaret, Fabrice Urban*

1420 **Invited Talk:** Words and Pictures, *Tamara Berg (Stony Brook Univ.)*

1450 **Invited Talk:** Modeling Aesthetics, Emotions, and Style, *James Wang (Penn State Univ.)*

1535 Afternoon Break

1600 **Invited Talk:** What Makes Paris Look like Paris?, *Alexei Efros (Carnegie Mellon Univ.)*

1630 Predicting Functional Regions on Objects, *Chaitanya Desai, Deva Ramanan*

1650 Visual Attention-driven Spatial Pooling for Image Memorability, *Bora Celikkale, Aykut Erdem, Erkut Erdem*

Computer Vision in Sports

Organizers: Thomas Moeslund
Graham Thomas

Location: C120-122

Schedule: Full day

0915 Welcome

0925 **Keynote Talk:** Computer Vision for Sports Coverage on Television, *Graham Thomas (BBC)*

1015 Morning Break

S1: Oral Session 1 (1045-1200)

1045 Recognising Team Activities from Noisy Data, *Alina Bialkowski, Patrick Lucey, Peter Carr, Simon Denman, Iain Matthews, Sridha Sridharan*

1110 Automatic Recognition of Offensive Team Formation in American Football Plays, *Indriyati Atmosukarto, Bernard Ghanem, Shaunak Ahuja, Karthik Muthuswamy, Narendra Ahuja*

1135 Sports Type Classification using Signature Heatmaps, *Rikke Gade,Thomas B. Moeslund*

1215 Lunch (provided)

1330 **Keynote Talk:** Actions in the Eye: From Hollywood to Sports, *Cristian Sminchisescu (Lund Univ.)*

S2: Oral Session 2 (1410-1525)

1410 Visible-Spectrum Gaze Tracking for Sports, *Bernardo R. Pires, Myung Hwangbo, Michael Devyver, Takeo Kanade*

1435 Non-Invasive Soccer Goal Line Technology: A Real Case Study, *Paolo Spagnolo, Marco Leo, Pier Luigi Mazzeo, Massimiliano Nitti, Ettore Stella, Arcangelo Distante*

1500 Reconstruction of 3D Trajectories for Performance Analysis in Table Tennis, *Sho Tamaki, Hideo Saito*

1525 Afternoon Break

S3: Oral Session 3 (1555-1735)

1555 Real-Time Person Detection and Tracking in Panoramic Video, *Marcus Thaler, Werner Bailer*

1620 Object Tracking by Occlusion Detection via Structured Sparse Learning, *Tianzhu Zhang, Bernard Ghanem, Changsheng Xu, Narendra Ahuja*

1645 Scale and Rotation Invariant Approach to Tracking Human Body Part Regions in Videos, *Yihang Bo, Hao Jiang*

1710 Athlete Pose Estimation from Monocular TV Sports Footage, *Mykyta Fastovets, Jean-Yves Guillemaut, Adrian Hilton*

1735 Closing remarks

Fine-Grained Visual Categorization

Organizers: Ryan Farrell
Steve Branson
Neeraj Kumar
Anelia Angelova
Florent Perronnin

Location: C123-124

Schedule: Full day

0845 Welcome

0850 **Invited Talk:** TBA, *Fei-Fei Li (Stanford Univ.)*

0920 **Invited Talk:** TBA, *Isabel Gauthier (Vanderbilt Univ.)*

0950 **Invited Talk:** TBA, *Marcus Rohrbach (MPI)*

1020 Morning Break

1040 **Invited Talk:** TBA, *Yann LeCun (New York Univ.)*

1110 Poster Spotlights

1130 Poster Session

1. Label-Embedding for Attribute-Based Classification, Zeynep Akata, Florent Perronnin, Zaid Harchaoui, Cordelia Schmid
2. Classification with Global, Local and Shared Features, Hakan Bilen, Vinay Namboodiri, Luc Van Gool
3. Crowdsourced Discovery of Fine-Grained Attributes, Subhransu Maji
4. Sparse Representation Based Structural Support Vector Machine for Fine-Grained Object Classification, Zhong Shi, Li Kai, Rui Feng
5. A Database for Fine-Grained Aircraft Recognition, Subhransu Maji, Andrea Vedaldi
6. POOF: Part-Based One-vs-One Features for Fine-Grained Visual Categorization, Thomas Berg, Peter Belhumeur
7. Learning Analogies from Independent Part Models, Keunhong Park, Ian Endres, Derek Hoiem
8. Is Fine Grained Classification Different?, Thomas Dietterich, Junyuan Lin
9. Hierarchical Classification of Sea-Floor Imagery, Michael Bewley, Navid Nourani-Vatani, Bertrand Douillard, Oscar Pizarro, Stefan Williams
10. Attribute-Based Detection of Unfamiliar Classes with Humans in the Loop, Catherine Wah, Serge Belongie
11. Co-segmentation for Fine Grained Visual Categorization, Yuning Chai, Victor Lempitsky, Andrew Zisserman
12. Vantage Feature Frames For Botanical Species Identification, Asma Rejeb Sfar, Nozha Boujemaa, Donald Geman
13. Collecting a Large-Scale Dataset of Fine-Grained Cars, Jonathan Krause, Jia Deng, Michael Stark, Li Fei-Fei
14. Fine-Grained Crowdsourcing for Fine-Grained Recognition, Jia Deng, Jonathan Krause, Li Fei-Fei
15. Efficient Object Segmentation for Fine-Grained Recognition, Anelia Angelova, Shenghuo Zhu

1200 Lunch (provided)

1400 **Invited Talk:** TBA, *Alyosha Efros (Carnegie Mellon Univ.)*

1430 **Invited Talk:** TBA, *Jessie Barry (Cornell Univ.)*

1500 **Invited Talk:** *Rogerio Feris (IBM)*

1530 Afternoon Break

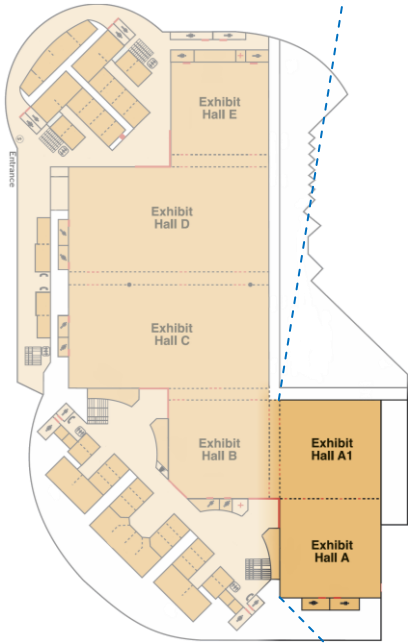
1550 Challenge Results / Winner Talk(s)

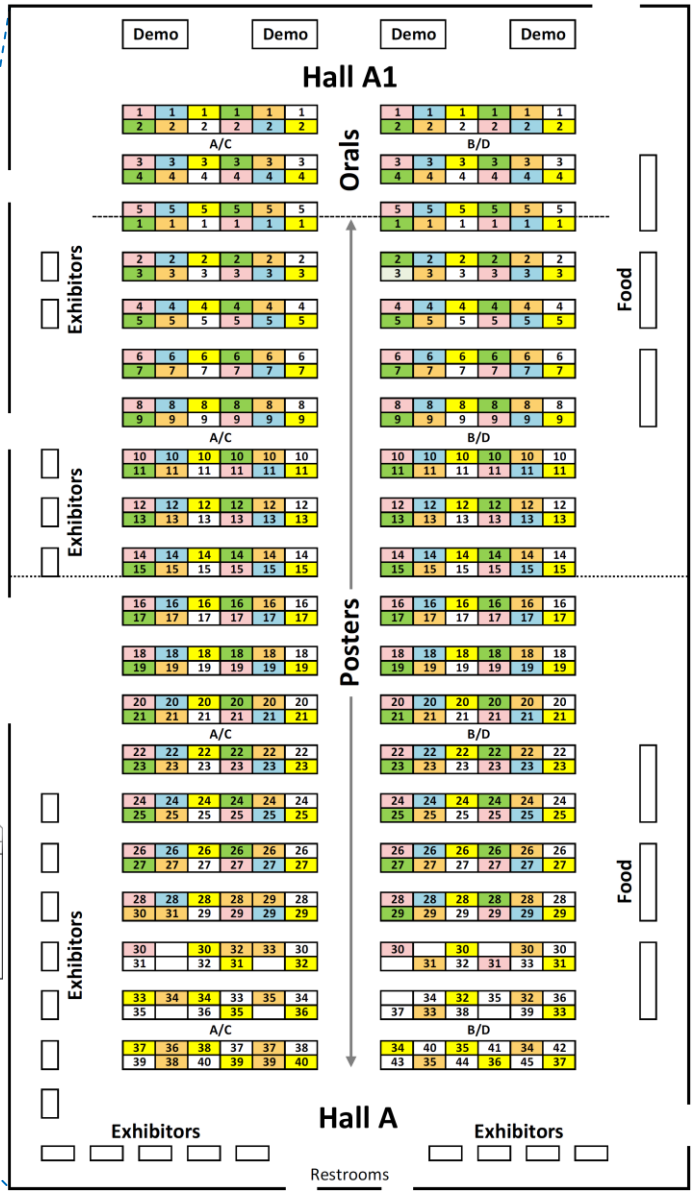
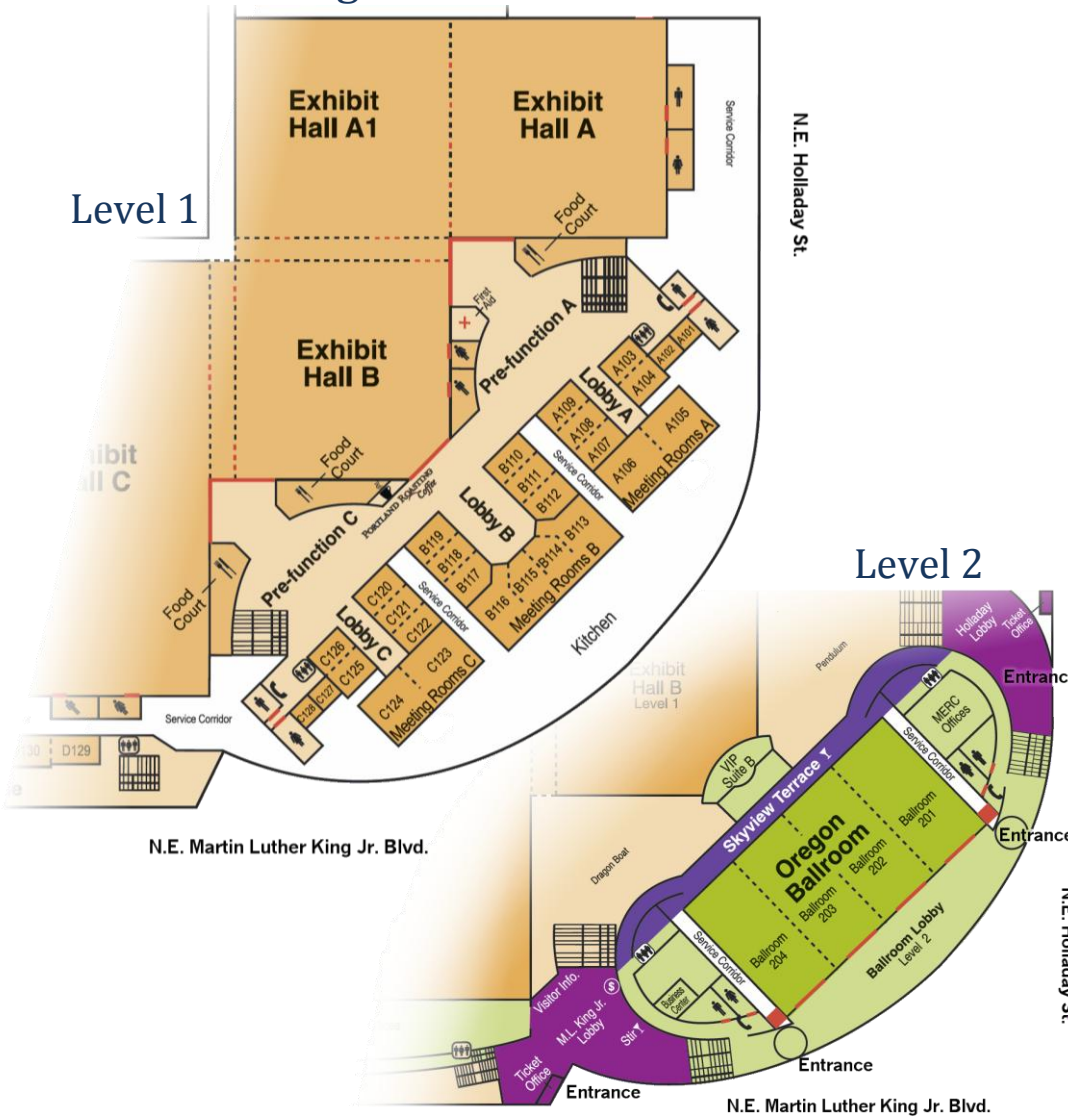
1635 **Panel Discussion:** *Alex Berg (Stonybrook), Jitendra Malik (UC Berkeley), David Forsyth (UIUC), Aude Oliva (MIT) ; Serge Belongie (UCSD) moderating*

1750 Concluding Remarks

Poster Layout (Exhibit Halls A-A1)

1A/B	Tue AM
1C/D	Tue PM
2A/B	Wed AM
2C/D	Wed PM
3A/B	Thur AM
3C/D	Thur PM

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