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General Information

Travel to Basel
BY PLANE: Flights arrive at Basel (BSL) or Zurich (ZRH)

BY TRAIN: Basel can easily be reached by train. Please check the SBB website (www.sbb.ch) for timetables and additional information.

Transportation to the Congress Venue
The congress venue can easily be reached by public transport. For details please consult our map Conference Venue on page 15.

Mobility Ticket
Visitors staying at a hotel in Basel receive a Mobility Ticket when checking in. It enables guests to use public transport in the city of Basel and its surroundings free of charge (zones 10, 11, 13 and 15, including EuroAirport) for the duration of their stay. Some hotels issue a room reservation confirmation stamped with “Mobility Ticket.” This entitles the visitor to free transfer from the airport to the hotel.

Taxi Services in Basel
All official taxis use a taximeter to calculate the price. A taxi from the train station to the conference site is about 20 CHF, from the airport about 40 CHF.

Taxi-Zentrale Basel: +41 61 222 22 22
33er Taxi +41 61 333 33 33
Taxiphon Genossenschaft +41 61 444 44 44
Airport Taxi Service Basel: +41 79 655 77 67

Registration
The registration will open on Tuesday and on Wednesday 08:00 AM to 12:30 PM. Please bring your ticket with the QR-Code to the registration desk in the entrance hall of the ZLF Building.

Conference Venue
If not specified otherwise, all events will take place at the University Hospital Basel, Zentrum für Lehre und Forschung (ZLF), Hebelstrasse 20, 4031 Basel.

Welcome Reception
The welcome reception will be held on Tuesday at 18:00 in the Restaurant Centrino, next to the ZLF building. All conference and workshop/tutorials participants are cordially invited to join.
Conference Dinner on Thursday, September 14th
Location: Restaurant Safran Zunft, Gerbergasse 11, Basel.

Time: 18.00 h

How to get there: Please consult our map Overview and Restaurants on page 12ff.

Connectivity during the event
Please connect to USB_GUEST_WLAN and enter your data to receive an SMS with your password. eduroam is available for registered users.

Proceedings
You will find the proceedings on a USB stick in your conference documentation. They will also be available at https://gcpr2017.dmi.unibas.ch/

Contact
Please do not hesitate to contact any of the following organizers if you have questions or require assistance:

Ruth Steinmann  ruth.steinmann@unibas.ch  Phone +41 76 450 20 93
Volker Roth  volker.roth@unibas.ch  Phone +41 61 207 05 49
Thomas Vetter  thomas.vetter@unibas.ch  Phone +41 61 207 05 56

Emergency Numbers
Police: 117
Fire brigade: 118
Emergency medical services: 144

Organization Committee
Chairs
Prof. Thomas Vetter, University of Basel
Prof. Volker Roth, University of Basel

Local Organization
Ruth Steinmann, University of Basel
PC Members

Andreas Dengel, Technical University of Kaiserslautern
Andreas Geiger, Max Planck Institute for Intelligent Systems
Andreas Maier, University of Erlangen-Nürnberg
Andres Bruhn, University of Stuttgart
Angela Yao, University of Bonn
Arjan Kuijper, Frauenhofer IGD
Bastian Leibe, RWTH Aachen University
Bastian Goldlücke, University of Konstanz
Bernhard Rinner, University of Klagenfurt
Bernt Schiele, MPI for Informatics and Saarland University
Björn Schuller, University of Passau
Björn Menze, TU Munich
Björn Ommer, University of Heidelberg
Bodo Rosenhahn, University of Hannover
Boris Flach, Technical University, Prague
Carsten Rother, TU Dresden
Carsten Steger MV Tec Software GmbH
Christian Theobalt, MPI for Informatics Saarbrücken
Christian Riess, University of Erlangen-Nürnberg
Christian Bauckhage, Fraunhofer IAIS
Christian Heipke, LU Hannover
Christoph Schnörr, University of Heidelberg
Csaba Beleznai, AIT
Daniel Cremers, TU Munich
Daniel Scharstein, Middlebury College
Dietrich Paulus, University of Koblenz-Landau
Fred Hamprecht, University of Heidelberg
Gerhard Rigoll, Technical University of Munich
Gernot Fink, TU Dortmund
Hanno Scharr, Jülich Research Centre
Helmut Mayer, Bundeswehr University Munich
Horst Bischof, Graz University of Technology
Jan-Michael Frahm, University of North Carolina
Joachim Buhmann, ETH Zürich
Joachim Weickert, Saarland University
Josef Pauli, University of Duisburg-Essen
Julia Vogt, University of Konstanz
Jürgen Gall, University of Bonn
Justus Piater, University of Innsbruck
Karsten Borgwardt, ETH Zürich
Klaus Tönnies, University of Magdeburg
Konrad Schindler, ETH Zürich
Laura Leal-Taixé, Technical University Munich
Lorenzo Rosasco, University of Genova
Marcello Pelillo, University of Venice
Marco Loog, Delft University of Technology
Margrit Gelautz, TU Vienna
Mario Fritz, MPI for Informatics
Martin Welk, UMIT Hall
Matthias Hein, Saarland University
Michael Goesele, TU Darmstadt
Monika Sester, Uni Hannover
Olaf Ronneberger, University of Freiburg
Olaf Hellwich, TU Berlin
Paolo Favaro, Universität Bern
Peter Gehler, MPI Intelligent Systems
Philipp Hennig, MPI Intelligent Systems
Philippe Cattin, Uni Basel
Rainer Stiefelhagen, Karlsruhe Institute of Technology
Reinhard Klette, University of Auckland
Reinhard Koch, Universität Kiel
Rudolf Mester, University of Frankfurt
Slobodan Iliic, TU Munich
Stefan Roth, TU Darmstadt
Stefan Steidl, University of Erlangen-Nürnberg
Thomas Pock, Graz University of Technology
Thomas Fuchs, MSKCC
Thomas Brox, University of Freiburg
Ullrich Köthe, University of Heidelberg
Uwe Franke, Daimler AG
Vaclav Hlavac, Czech Technical University Prague
Walter Kropatsch, TU Wien
Wilhelm Burger, FH Hagenberg
Wolfang Förstner, Universität Bonn
Xiaoyi Jiang, Münster University
Program

Keynotes

Prof. Dr. Kilian Q. Weinberger - Deep Learning with Dense Connectivity

Kilian Weinberger is an Associate Professor in the Department of Computer Science at Cornell University. He received his Ph.D. from the University of Pennsylvania in Machine Learning under the supervision of Lawrence Saul and his undergraduate degree in Mathematics and Computer Science from the University of Oxford. During his career, he has won several best paper awards at ICML (2004), CVPR (2004, 2017), AISTATS (2005) and KDD (2014, runner-up award). In 2011, he was awarded the Outstanding AAAI Senior Program Chair Award and in 2012 he received an NSF CAREER award. He was elected co-Program Chair for ICML 2016 and for AAAI 2018. In 2016, he was the recipient of the Daniel M Lazar ’29 Excellence in Teaching Award. Kilian Weinberger's research focuses on Machine Learning and its applications. In particular, he focuses on learning under resource constraints, metric learning, machine learned web-search ranking, computer vision and deep learning. Before joining Cornell University, he was an Associate Professor at Washington University in St. Louis and before that he worked as a research scientist at Yahoo! Research in Santa Clara.

Abstract

Although half a decade has passed since Frank Rosenblatt's original work on multi-layer perceptrons, modern artificial neural networks are still surprisingly similar to his original ideas. In this talk I will question one of their most fundamental design aspects. As networks have become much deeper than had been possible or had even been imagined in the 1950s, it is no longer clear that the layer by layer connectivity pattern is a well-suited architectural choice. In the first part of the talk I will show that randomly removing layers during training can speed up the training process, make it more robust, and ultimately lead to better generalization. We refer to this process as learning with stochastic depth as the effective depth of the networks varies for each minibatch. In the second part of the talk I will propose an alternative connectivity pattern, Dense Connectivity, which is inspired by the insights obtained from stochastic depth. Dense connectivity leads to substantial reductions in parameter sizes, faster convergence, and further improvement in generalization. Finally, I will investigate the question why deep neural networks are so well suited for natural images and provide evidence that they linearize the underlying sub-manifold into a Euclidean feature space.
**Prof. Dr. Pietro Perona - Towards a computational approach to behavior**

Professor Perona’s research focusses on vision: how do we see and how can we build machines that see. Professor Perona has been mostly active in the area of visual recognition, more specifically visual categorization. He is studying how machines can learn to recognize frogs, cars, faces and trees with minimal human supervision, and how one could make large image collections and even the web searchable by image content.

**Degrees and Appointments:**

**Abstract**
To interact successfully with people machines will need a visual system that allows them to `read' behavior: who is where, what are they doing and why, what will happen next. I will describe our work towards a computational approach to the study of behavior, including our efforts in building automated systems to measure and analyze the trajectories, actions and activities of animal models such as fruit fly Drosophila and mouse, as well as humans. I will speculate on future directions including predicting future events and understanding causal relationships.

**Prof. Dr. Marcello Pelillo - Through the Philosopher’s Glass**

Marcello Pelillo is Professor of Computer Science at Ca’ Foscari University in Venice, Italy, where he directs the European Centre for Living Technology (ECLT) and the Computer Vision and Pattern Recognition group. He held visiting research positions at Yale University, McGill University, the University of Vienna, York University (UK), the University College London, the National ICT Australia (NICTA), and is an affiliated faculty member of Drexel University (USA).

He has published more than 200 technical papers in refereed journals, handbooks, and conference proceedings in the areas of pattern recognition, computer vision and machine learning. He is General Chair for ICCV 2017, Track Chair for ICPR 2018, and has served as Program Chair for several conferences and workshops, many of which he initiated (e.g., EMMCVPR, SIMBAD, IWCV). He serves (has served) on the Editorial Boards of the journals IEEE Transactions on Pattern Analysis and Machine Intelligence (PAMI), Pattern Recognition, IET Computer Vision, Frontiers in Computer Image Analysis, Brain Informatics, and serves on the Advisory Board of the International Journal of Machine Learning and Cybernetics. Prof. Pelillo has been elected a Fellow of the IEEE and a Fellow of the IAPR, and has recently been appointed IEEE SMC Distinguished Lecturer.
Abstract
Scientists have typically divergent attitudes towards philosophy, ranging from those who think that science without epistemology is "primitive and muddled" (Einstein) to those who claim we should not expect philosophy to provide them "with any useful guidance about how to go about their work" (Weinberg). Although both positions contain an element of truth, in this talk I’ll side with the former, in the conviction that a greater awareness of the philosophical questions underpinning one’s research field can only be beneficial and, in any case, can’t do any harm. In particular, I’ll take the view that machine learning and pattern recognition are "a continuation of epistemology by other means" (*), and will try to critically examine some of the most fundamental (and often tacit) assumptions of our field through a philosopher’s lens. This could be an opportunity for reflection, reassessment and possibly some synthesis, with a view to provide the field a self-portrait of where it currently stands and where it is going as a whole.

[* Liberally adapted from Carl von Clausewitz.]

Workshop and Tutorials
Tuesday, Sep 12

09:00-17:30 Tutorials

Session 1: 09:00-12:30 Interpretable Machine Learning.
09:00 -12:30 Wojciech Samek, Fraunhofer Institute for Telecommunications, Berlin and Klaus-R. Müller, TU Berlin, Germany.

Session 2: 14:00-17:30 Medical Image Analysis.
14:00-15:30 Thomas Fuchs, Memorial Sloan Kettering Cancer Center, New York.
16:00-17:30 Marcel Lüthi, University of Basel, Switzerland.

09:00-18:00 Workshop

New Challenges in Neural Computation (NC²).
Workshop of theGI-Fachgruppe Neuronale Netze and the German Neural Networks Society.
Location: Bernoullianum, Hörsaal 223, Bernoullistrasse 30.

Coffee for workshop/tutorial participants will be served 10:30-11:00 and 15:30-16:00 in the entrance hall of the ZLF building.

18:00 Welcome Reception. Restaurant Centrino, next to the ZLF building.
Main Conference
Wednesday, Sep 13

09:00-09:25 Opening/Awards.

09:25-10:20 German Pattern Recognition Award.

10:20-10:45 Oral session 1.

Motion and Segmentation:

10:45-11:15 Coffee.

11:15-12:30 Oral session 2.

Machine Learning and Pattern Recognition:
11:15 End-to-End Learning of Video Super-Resolution with Motion Compensation. Osama Makansi, Eddy Ilg, Thomas Brox.


Biomedical Image Processing:
12:05 A Quantitative Assessment of Image Normalization for Classifying Histopathological Tissue of the Kidney. Michael Gadermayr, Sean Cooper, Barbara Klinkhammer, Peter Boor, Dorit Merhof.

12:30-14:00 Lunch break.

14:00-15:15 Oral session 3

Classification and Detection:
14:00 Deep Learning for Vanishing Point Detection Using an Inverse Gnomonic Projection. Florian Kluger, Hanno Ackermann, Michael Ying Yang, Bodo Rosenhahn.


Image and Video Processing:

15:15-15:45 Coffee.

15:45-17:30 Poster Session 1.
Thursday, Sep 14

09:00-09:55 Keynote: Kilian Q. Weinberger, Cornell University.

09:55-10:45 Oral session 4.

Computational Photography:
09:55 Robust Multi-Image HDR Reconstruction for the Modulo Camera. Florian Lang, Tobias Plötz, Stefan Roth.

10:20 Motion Deblurring in the Wild. Mehdi Noroozi, Paramanand Chandramouli, Paolo Favaro.

10:45-11:15 Coffee.

11:15-12:30 Oral session 5.

Reconstruction and Depth:

11:40 Down to Earth: Using Semantics for Robust Hypothesis Selection for the Five-Point Algorithm. Andreas Kuhn, True Price, Jan-Michael Frahm, Helmut Mayer.


12:30-14:00 Lunch break.

14:00-14:55 Keynote: Marcello Pelillo, Ca’ Foscari University of Venice.


15:30-17:10 Oral session 6.

Mathematical Foundations and Statistical Models:


18:00 Conference Dinner: Restaurant Safran Zunft, Gerbergasse 11.
Friday, Sep 15

09:00-09:55 Keynote: Pietro Perona, California Institute of Technology.


10:25-12.00 Poster Session 2.

12:00-12:20 Awards and Closing.
Maps

Overview and Restaurants

Conference dinner
1 Restaurant Safran Zunft Gerbergasse 11

European, Swiss, Traditional cuisine
2 Mensa Universität Basel Bernoullistrasse 14
3 Restaurant zum Tell Spalenvorstadt 38
4 Restaurant zur Harmonie Petersgraben 71
5 Restaurant Hasenburg Schneidergasse 20
6 Restaurant jakob “Der vierte König” Blumenrain 20
7 Kohlmanns Steinengraben 14
8 Restaurant Löwenzorn Gemsberg 2/4

Italian cuisine
9 Spiga Ristorante Eisengasse 9
10 Ristorante Centro Streitgasse 20

Spanish cuisine
11 Restaurant Tapas del Mar Spalenburg Schnabelgasse 2
12 Restaurant Bodega España Heuberg 4

Anatolian cuisine
13 Restaurant Pinar Herbergerstrasse 1

Indian cuisine
14 Indian Tandoori Palace Petersgraben 21
15 Mandir Schützenmattstrasse 2
Map
Conference Venue

- Eingang Klinikum 1, Informationsporte Spitalstrasse 21
- Eingang Klinikum 2, Informationsporte Petersgraben 4
- Zentrum für Lehre und Forschung (ZLF), Hebelstrasse 20

City Parking
- Einfahrt Schanzenstrasse oder Einfahrt Klingelbergstrasse
- Ausgang Hebelstrasse, Universitätssspital Basel und ZLF
- Ausgang Petersgraben, Universitätssspital Basel Klinikum 2
- Ausgang Schanzenstrasse, Universitätssspital Basel Klinikum 1

Öffentliche Verkehrsmittel
- Bus 31, 33, 34, 36, 38 – Universitätssspital
- Bus 34 – Universitätssspital
- Tram 11 – Universitätssspital
- Bus 31, 33, 36, 38 – Universitätssspital
- Bus 31, 33, 36, 38, 603, 604 – Kinderspital UKBB
- Bus 30 – Kinderspital UKBB
- Bus 30, 33 – Kinderspital UKBB
- Bus 31, 36, 38, 603, 604 – Kinderspital UKBB
- Bus 30, 33 – Bernoullianum