GCPR 2019

41th German Conference on Pattern Recognition, formerly DAGM Symposium, September 10 – 13, 2019, Dortmund, Germany

Foto: Olaf Heil

GCPR 2019

41th German Conference on Pattern Recognition
September 10-13th, 2019: Dortmund, Germany
`www.gcpr2019.org`

GCPR 2019 Office

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GCPR 2019 Venue

Tutorials / Seminar: OH14, *Otto-Hahn-Str. 14*
Main Conference: Seminarraumgebäude I, *Friedrich-Wöhler-Weg 6*

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Welcome to GCPR2019

It is an honor and pleasure to organize the 41th German Conference on Pattern Recognition (GCPR 2019) in Dortmund during September 10–13, 2019. In the long tradition of the DAGM conference series, GCPR returns to the Ruhr Area (after the DAGM Symposium 1980 held in Essen) and takes place in Dortmund for the first time.

The city of Dortmund is associated with a long tradition of beer brewing, which to some extent is still visible today, and, more importantly, with the steel and mining industry that dominated the Ruhr Area for almost a century. Today, all that remains of this period are museums and impressive monuments of industrial heritage. Finding new avenues for industry in the region has been a challenge for many years. Dortmund as a city mastered this challenge by transforming into what today can be considered an IT and science location. Among the several scientific institutions, TU Dortmund University is the most prominent one. Its spacious green campus in the south-west of the city offers the venue for GCPR 2019.

The call for papers for GCPR 2019 resulted in 91 submissions from institutions from 23 countries. Given the positive experiences made in the last year, where special tracks were introduced to increase the emphasis on applied research, GCPR 2019 continued to offer special tracks with dedicated track chairs. Each paper underwent a strict double-blind reviewing process, resulting in three reviews, in almost all cases from Program Committee members, sometimes with support from additional experts. In total, 43 papers were accepted for publication (acceptance rate 47%). From those submissions, 16 papers were selected for oral presentation, whereas

27 contributions were chosen as posters. In accordance with the conference tradition, we organized a Young Researchers Forum to promote scientific interaction between outstanding young researchers and our community. The work of five selected students is presented at the conference. The resulting high-quality single-track program covers the entire spectrum of pattern recognition, machine learning, image processing, and computer vision. We thank all authors for their submissions to GCPR 2019 and all reviewers for their valuable assessment.

Moreover, we are glad that three internationally renowned researchers accepted our invitation to give keynote lectures, Marc Pollefeys (ETH Zurich, Switzerland), Laurens van der Maaten (Facebook AI Research, New York, USA), and Bram van Ginneken (Radboud University Medical Center Nijmegen, The Netherlands).

The technical program is complemented by two tutorials: Automated Machine Learning (Matthias Feurer and Thomas Elsken, University of Freiburg, Germany) and Vision for Robotics (Tim Patten, TU Vienna, Austria; Cesar Cadena, ETH Zurich, Switzerland). Finally, we also offer a half-day seminar on founding a Start-up (René Grzeszick, MotionMiners, Dortmund, Germany) at the end of the conference. With this overall program we hope to continue the tradition of GCPR in providing a forum for scientific exchange at a high quality level.

The success of GCPR 2019 would not have been possible without the support of many institutions and people. We would like to thank our sponsors ZEISS (Gold Sponsor), MVTec Software GmbH (Silver Sponsor) and Amazon and Informatik Centrum Dortmund e.V. (Bronze Sponsors) as well

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as our donors *Gesellschaft der Freunde der TU Dortmund* and *Alumni der Informatik Dortmund.* We are also grateful for the kind support of TU Dortmund University and *Deutsche Arbeitsgemeinschaft Mustererkennung e.v.* (DAGM). Special thanks go to the members of the Technical Support and the Local Organizing Committee. Finally, we are grateful to Springer for giving us the opportunity of continuing to publish GCPR proceedings in the LNCS series.

We are looking forward to a successful conference and to welcoming you to Dortmund.

September 2019   Gernot A. Fink
Simone Frintrop
Xiaoyi Jiang

GCPR 2019

Contents

GCPR 2019

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GCPR 2019

Invited Speakers

Marc Pollefeys

Computer Vision and Geometry Lab (CVG)
Institute of Visual Computing,
Dept. of Computer Science, ETH Zurich,
Microsoft MR & AI lab,
Zurich, Switzerland

Privacy-preserving image-based localization

Image-based localization is a core component of many augmented/mixed
reality (AR/MR) and autonomous robotic systems. Current localization
systems rely on the persistent storage of 3D point clouds of the scene to
enable camera pose estimation, but such data reveals potentially sensitive
scene information. This gives rise to significant privacy risks, especially
as for many applications 3D mapping is a background process that the
user might not be fully aware of. We pose the following question: How
can we avoid disclosing confidential information about the captured 3D
scene, and yet allow reliable camera pose estimation? We proposed the
first solution to what we call privacy preserving image-based localization.
The key idea of our approach is to transform the map representation from
a 3D point cloud to a 3D line cloud. This novel representation obfuscates
the underlying scene geometry while providing sufficient geometric con-
straints to enable robust and accurate 6-DOF camera pose estimation.
Inversely, the same concept can be used to transform 2D feature points
in the image to 2D lines similarly allowing to preserve privacy and ren-
der image inversion attacks ineffective. Extensive experiments on several
datasets and localization scenarios underline the high practical relevance
of our proposed approach.

Laurens van der Maaten

Facebook AI Research,
New York, USA

From Visual Recognition to Visual Understanding

This talk gives an overview of some of our recent work on visual recognition and visual understanding.

The first part of the talk considers visual recognition. It presents results of experiments in which we train convolutional networks on billions of weakly supervised web images. The results of our experiments reveal the benefits of this type of training: for example, we report the highest ImageNet-1k single-crop, top-1 accuracy to date: 85.4%.

The second part of the talk raises the question whether recent successes in visual recognition also pave the way towards visual understanding. It highlights the challenges of visual understanding by uncovering representation biases in current image classification, visual question answering, and image captioning evaluations. To address these problems, we developed the BISON and CLEVR benchmarks in an attempt to provide tools to better tools for studying visual understanding. Finally, the talk presents a benchmark, called PHYRE, that builds on ideas from CLEVR but is intended for the study of systems that possess physical understanding.

Bram van Ginneken

Radboud University Medical Center
Nijmegen, Netherlands

Some say computer vision is solved. What does this mean for doctors who earn their money looking at images and reporting what they see?

In this lecture, I will show recent results of deep learning on radiology, pathology, and ophthalmology. I will discuss the remarkably slow take-up of these new technologies and ponder upon the longer-term consequences and opportunities for improving our healthcare systems. Open problems and new research directions, such as effective data annotation, image construction, effective detection of rare abnormalities, and systems that can do reasoning will be identified.

GCPR 2019

Program

Schedule Overview

10th Tuesday	11th Wednesday	12th Thursday	13th Friday
Tutorial I **Automated ML** Part I	Opening	DAGM Excellence Awards Session	
	Keynote **Laurens van der Maaten**		Keynote **Bram van Ginneken**
Coffee Break	Coffee Break	Poster Session #2 & Coffee	
Tutorial I **Automated ML** Part II	Oral Session #1 **Image Processing and Analysis**		Poster Session #3 & Coffee
		Oral Session #3 **Learning**	Awards, Closing
Lunch Break			
Tutorial II **Vision for Robotics** Part I	Poster Session #1 & Coffee	Keynote **Marc Pollefeys**	Seminar **Founding a Start-up** Part I
		Coffee Break	
Coffee Break	Oral Session #2 **Imaging Techniques, Image Analysis**	Oral Session #4 **Image Analysis, Applications**	Coffee Break
Tutorial II **Vision for Robotics** Part II			Seminar **Founding a Start-up** Part II
	DAGM Assembly		
Reception		Dinner	

GCPR 2019

Tuesday, September 10th

08:30	**Registration opens (Otto-Hahn-Str. 14)**
9:00 – 10:30	**Tutorial:** Automated Machine Learning: Introduction to Hyperparameter Optimization and Neural Architecture Search Part I (Otto-Hahn-Straße 14, Room E23)
10:30 – 11:00	**Coffee Break**
11:00 – 12:30	**Tutorial:** Automated Machine Learning: Introduction to Hyperparameter Optimization and Neural Architecture Search Part II (Otto-Hahn-Straße 14, Room E23)
12:30 – 14:30	**Lunch Break**
14:30 – 16:00	**Tutorial:** Vision for Robotics Part I — Which robotic platform should I use? (Otto-Hahn-Straße 14, Room E23)
16:00 – 16:30	**Coffee Break**
16:30 – 18:00	**Tutorial:** Vision for Robotics Part II — Semantics and deep learning for robotic perception (Otto-Hahn-Straße 14, Room E23)
19:00 – 21:00	**Reception** Hövels Brewery (see page 32 for details)

GCPR 2019

Wednesday, September 11th

8:30	**Registration opens** (Seminarraumgebäude I, Foyer)

9:00 – 9:20	**Welcome** (Seminarraumgebäude I, H.001; Chairs: Gernot A. Fink, Simone Frintrop, Xiaoyi Jiang)
9:20 – 10:20	**Keynote** (Seminarraumgebäude I, H.001, Chair: Simone Frintrop)

Laurens van der Maaten: From Visual Recognition to Visual Understanding

10:20 – 10:50	**Coffee Break**
10:50 – 12:30	**Oral Session #1: Image Processing and Analysis** (Seminarraumgebäude I, H.001; Session Chair: Jürgen Gall)

Patrick Knöbelreiter and Thomas Pock: Learned Collaborative Stereo Refinement

Andreas Kuhn, Shan Lin and Oliver Erdler: Plane Completion and Filtering for Multi-View Stereo Reconstruction

Petra Bevandić, Ivan Krešo, Marin Oršić and Siniša Šegvić: Simultaneous Semantic Segmentation and Outlier Detection in Presence of Domain Shift

Cathrin Elich, Francis Engelmann, Theodora Kontogianni and Bastian Leibe: 3D Bird's-Eye-View Instance Segmentation

Dimitri Korsch, Paul Bodesheim and Joachim Denzler: Classification-Specific Parts for Improving Fine-Grained Visual Categorization

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12:30 – 14:00	**Lunch Break**

14:00 – 15:30	**Poster Session #1** (Seminarraumgebäude I, 1.001)

Viktor Wegmayr, Maurice Hörold and Joachim M. Buhmann: Generative Aging of Brain MR-Images and Prediction of Alzheimer Progression — P 1.1

Violeta Teodora Trifunov, Maha Shadaydeh, Jakob Runge, Veronika Eyring, Markus Reichstein and Joachim Denzler: Nonlinear Causal Link Estimation under Hidden Confounding with an Application to Time Series Anomaly Detection — P 1.2

Radim Špetlík and Ivan Razumenić: Iris Verification with Convolutional Neural Network and Unit-Circle Layer — P 1.3

Matthias Ochs, Adrian Kretz and Rudolf Mester: SDNet: Semantically Guided Depth Estimation Network — P 1.4

Ricard Durall, Franz-Josef Pfreundt, Ullrich Köthe and Janis Keuper: Object Segmentation using Pixel-wise Adversarial Loss — P 1.5

Jonáš Šerých, Jiří Matas: Visual Coin-Tracking: Tracking of Planar Double-Sided Objects — P 1.6

Tongxin Hu, Wentong Liao, Michael Ying Yang and Bodo Rosenhahn: Exploiting Attention for Visual Relationship Detection — P 1.7

Anne S. Wannenwetsch, Martin Kiefel, Peter V. Gehler and Stefan Roth: Learning Task-Specific Generalized Convolutions in the Permutohedral Lattice — P 1.8

Jan Laermann, Wojciech Samek and Nils Strodthoff: Achieving Generalizable Robustness of Deep Neural Networks by Stability Training   P 1.9

Nectar Track

Thiemo Alldieck, Marcus Magnor, Bharat Lal Bhatnagar, Christian Theobalt and Gerard Pons-Moll: Learning to Reconstruct People in Clothing from a Single RGB Camera (CVPR)   N 1.1

Anurag Ranjan, Javier Romero and Michael J. Black: Learning Human Optical Flow (BMVC)   N 1.2

Daniel Scharstein, Tatsunori Taniai, and Sudipta Sinha: Semi-global stereo matching with surface orientation priors (3DV)   N 1.3

Lynton Ardizzone, Jakob Kruse, Sebastian Wirkert, Daniel Rahner, Eric W. Pellegrini, Ralf S. Klessen, Lena Maier-Hein, Carsten Rother, and Ullrich Köthe: Analyzing inverse problems with invertible neural networks (ICLR)   N 1.4

GCPR 2019

15:30 – 16:50   **Oral Session #2: Imaging Techniques, Image Analysis**
(Seminarraumgebäude I, H.001;
Session Chair: Helmut Mayer)

Mengkun She, Yifan Song, Jochen Mohrmann and Kevin Köser: Adjustment and Calibration of Dome Port Camera Systems for Underwater Vision

Tak Ming Wong, Matthias Kahl, Peter Haring-Bollívar, Andreas Kolb and Michael Möller: Training Auto-Encoder-Based Optimizers for Terahertz Image Reconstruction

Pau Panareda Busto and Juergen Gall: Joint Viewpoint and Keypoint Estimation with Real and Synthetic Data

Denys Rozumnyi, Jan Kotera, Filip Šroubek and Jiří Matas: Non-Causal Tracking by Deblatting

17:00 – 18:30   **DAGM Assembly**
(Seminarraumgebäude I, H.001)

GCPR 2019

Thursday, September 12th

8:30	**Registration opens** (Seminarraumgebäude I, Foyer)

9:00 – 10:00	**DAGM Excellence Awards Session** (Seminarraumgebäude I, H.001; Chairs: Reinhard Koch)
10:00 – 11:30	**Poster Session #2** (Seminarraumgebäude I, 1.001)

Lars Schmarje, Claudius Zelenka, Ulf Geisen, Claus-C. Glüer and Reinhard Koch: 2D and 3D Segmentation of Uncertain Local Collagen Fiber Orientations in SHG Microscopy
P 2.1

Stefan Milz, Martin Simon, Kai Fischer, Maximillian Pöpperl and Horst-Michael Gross: Points2Pix: 3D Point-Cloud to Image Translation using conditional GANs
P 2.2

Puneet Gupta and Esa Rahtu: MLAttack: Fooling Semantic Segmentation Networks by Multi-Layer Attacks
P 2.3

Clemens-Alexander Brust and Joachim Denzler: Not Just a Matter of Semantics: The Relationship between Visual and Semantic Similarity
P 2.4

Monica Haurilet, Ziad Al-Halah and Rainer Stiefelhagen: DynGraph: Visual Question Answering via Dynamic Scene Graphs
P 2.5

The-Gia Leo Nguyen, Lynton Ardizzone and Ullrich Köthe: Training Invertible Neural Networks as Autoencoders
P 2.6

Nikolai Ufer, Kam To Lui, Katja Schwarz, Paul Warkentin and Björn Ommer: Weakly Supervised Learning of Dense Semantic Correspondences and Segmentation — P 2.7

Michael Kissner and Helmut Mayer: A Neural-Symbolic Architecture for Inverse Graphics Improved by Lifelong Meta-Learning — P 2.8

Sayan Rakshit, Biplab Banerjee, Gemma Roig, Subhasis Chaudhuri: Unsupervised Multi-Source Domain Adaptation Driven by Deep Adversarial Ensemble Learning — P 2.9

Nectar Track

Bharat Lal Bhatnagar, Garvita Tiwari, Christian Theobalt and Gerard Pons-Moll: Multi-Garment Net: Learning to Dress 3D People from Images (ICCV) — N 2.1

Apratim Bhattacharyya, Mario Fritz and Bernt Schiele: Bayesian Prediction of Future Street Scenes using Synthetic Likelihoods (ICLR) — N 2.2

Fernando Moya Rueda and Gernot A. Fink: Learning Attribute Representation for Human Activity Recognition (ICPR) — N 2.3

Soumajit Majumder and Angela Yao: Content-Aware Multi-Level Guidance for Interactive Instance Segmentation (CVPR) — N 2.4

Bastian Wandt and Bodo Rosenhahn: RepNet: Weakly Supervised Training of an Adversarial Reprojection Network for 3D Human Pose Estimation (CVPR) (former poster N 3.2) — N 2.5

GCPR 2019

11:30 – 12:30	**Oral Session #3: Learning** (Seminarraumgebäude I, H.001; Session Chair: Joachim Buhmann)

Chaithanya Kumar Mummadi, Tim Genewein, Dan Zhang, Thomas Brox and Volker Fischer: Group Pruning using a Bounded-l_p norm for Group Gating and Regularization

Thomas Pinetz, Daniel Soukup and Thomas Pock: On the Estimation of the Wasserstein Distance in Generative Models

Sebastian Mathias Keller, Maxim Samarin, Mario Wieser and Volker Roth: Deep Archetypal Analysis

12:30 – 14:00	**Lunch Break**
14:00 – 15:00	**Keynote** (Seminarraumgebäude I, H.001; Chair: Reinhard Koch)

Marc Pollefeys: Privacy-preserving image-based localization

GCPR 2019

15:00 – 15:30	**Coffee Break**

15:30 – 16:50	**Oral Session #4: Image Analysis, Applications** (Seminarraumgebäude I, H.001; Session Chair: Carsten Steger)

Josip Šarić, Marin Oršić, Tonći Antunović, Sacha Vražić and Siniša Šegvić: Single Level Feature-to-Feature Forecasting with Deformable Convolutions

Christian Requena-Mesa, Markus Reichstein, Miguel Mahecha, Basil Kraft and Joachim Denzler: Predicting Landscapes from Environmental Conditions Using Generative Networks

Yauhen Babakhin, Artsiom Sanakoyeu and Hirotoshi Kitamura: Semi-Supervised Segmentation of Salt Bodies in Seismic Images using an Ensemble of Convolutional Neural Networks

Viktor Wegmayr, Giacomo Giuliari and Joachim M. Buhmann: Entrack: A Data-Driven Maximum-Entropy Approach to Fiber Tractography

19:30	**Conference Dinner** Signal Iduna Park, Room: Friedensplatz (see page 34 for details)

GCPR 2019

Friday, September 13th

| 8:30 | **Registration opens** (Seminarraumgebäude I, Foyer) |

| 9:30 – 10:30 | **Keynote** (Seminarraumgebäude I, H.001; Chair: Xiaoyi Jiang) |

Bram van Ginneken: Some say computer vision is solved. What does this mean for doctors who earn their money looking at images and reporting what they see?

| 10:30 – 12:00 | **Poster Session #3** (Seminarraumgebäude I, 1.001) |

Maha Shadaydeh, Joachim Denzler, Yanira Guanche García and Miguel Mahecha: Time-Frequency Causal Inference Uncovers Anomalous Events in Environmental Systems — P 3.1

Enes Aslan and Yusuf Sinan Akgul: Tongue Contour Tracking in Ultrasound Images With Spatiotemporal LSTM Networks — P 3.2

Soumajit Majumder and Angela Yao: Localized Interactive Instance Segmentation — P 3.3

Julian Tanke and Juergen Gall: Iterative Greedy Matching for 3D Human Pose Tracking from Multiple Views — P 3.4

Kilian Pfeiffer, Alexander Hermans, István Sárándi, Mark Weber and Bastian Leibe: Visual Person Understanding through Multi-Task and Multi-Dataset Learning — P 3.5

Pawel Trajdos and Marek Kurzynski: Dynamic Classifier Chains for Multi-Label Learning — P 3.6

Xiaojuan Wang, Martin R. Oswald, Ian Cherabier and Marc Pollefeys: Learning 3D Semantic Reconstruction on Octrees — P 3.7

Deyao Zhu, Marco Munderloh, Bodo Rosenhahn and Jörg Stückler: Learning to Disentangle Latent Physical Factors for Video Prediction — P 3.8

David T. Hoffmann, Dimitrios Tzionas, Michael J. Black and Siyu Tang: Learning to Train with Synthetic Humans — P 3.9

Nectar Track

Björn Barz and Joachim Denzler: Hierarchy-based Image Embeddings for Semantic Image Retrieval (WACV) — N 3.1

Georgios Pavlakos, Vasileios Choutas, Nima Ghorbani, Timo Bolkart, Ahmed A. A. Osman, Dimitrios Tzionas and Michael J. Black: Expressive Body Capture: 3D Hands, Face, and Body from a Single Image (CVPR) — N 3.3

Eugen Rusakov, Leonard Rothacker, Hynuho Mo and Gernot A. Fink: A Probabilistic Retrieval Model for Word Spotting Based on Direct Attribute Prediction (ICFHR) — N 3.4

GCPR 2019

12:00 – 12:30	**GCPR Best Paper Awards, Closing** (Seminarraumgebäude I, H.001; Chairs: Gernot A. Fink, Simone Frintrop, Xiaoyi Jiang)
12:30 – 14:00	**Lunch Break**
14:00 – 15:30	**Seminar:** From Research to Practice — Founding a Start-up after the Doctorate Part I (Otto-Hahn-Straße 14, Room E04)
15:30 – 16:00	**Coffee Break**
16:00 – 17:30	**Seminar:** From Research to Practice — Founding a Start-up after the Doctorate Part II (Otto-Hahn-Straße 14, Room E04)

GCPR 2019

Tutorials

Automated Machine Learning: Introduction to Hyperparameter Optimization and Neural Achitecture Search

Organizer: **Matthias Feurer** and Thomas Elsken

University of Freiburg,
Freiburg, Germany

Description. The success of machine learning crucially relies on human machine learning experts, who construct appropriate features and workflows, and select appropriate machine learning paradigms, algorithms, neural architectures, and their hyperparameters. Automated Machine Learning (AutoML) is an emerging research area that targets the progressive automation of machine learning, which uses machine learning and optimization to develop off-the-shelf machine learning methods. It targets both ML researchers and non-ML experts, easing and enabling the use of machine learning algorithms. AutoML covers a broad range of subfields, including hyperparameter optimization, neural architecture search and meta-learning. This tutorial will cover the methods underlying the current state of the art in this fast-paced field and also contain hands-on exercises using state-of-the-art AutoML tools.

Outline:
- Introduction and Motivation
- Automated Machine Learning via Hyperparameter optimization
- Neural Architecture Search
- Meta-Learning and Learning to Learn
- Hands-on

Vision in Robotics

Organizer: **Tim Patten** and Cesar Cadena

TU Vienna, Austria
ETH Zurich, Switzerland

Description. Robot perception is the act of interpreting sensor data to generate an awareness of the surrounding environment and robot vision specifically interprets the data from onboard cameras. In recent years, robot vision has experienced significant leaps forward due to the availability of inexpensive RGB-D cameras, which has enabled direct perception of the 3D world, and the exploitation of deep learning, which has established state of the art for many semantic tasks. Despite these progressions, there is a frustrating performance gap between computer vision algorithms tested in the lab and those deployed in the wild.

The aim of this tutorial is to cover the concepts, methods, applications and challenges of vision for robotics in order to both expose and bridge the gap between computer and robot vision. The tutorial will be divided into two sessions. The aim of the first session is to give an overview of simple robotic platforms that are suitable for different tasks to encourage computer vision experts to test their work in real-world domains. The second session will cover semantic understanding of the environment with a focus on modern deep learning approaches that are frequently applied in robotics.

Part I: Which robotic platform should I use?

This talk will look in detail at available robot platforms that are suitable for robotic vision experimentation. The focus will be on out-of-the-box platforms that can be simply set up and used directly

to deploy vision algorithms. This will include an overview of system prerequisites, software frameworks and a description of common platforms that are usable with minimal hardware knowledge.

Part II: Semantics and deep learning for robotic perception?

This talk will look at the typical vision tasks faced by robots and clarify the differences between methods and results when algorithms are applied in the lab as opposed to the real world. This will first cover the challenges of employing standard techniques and then give an overview of frequently used methods in the robotics context by describing what does and does not work. The talk will also present state of the art for vision tasks, such as object detection, as well as robotic related tasks, such as grasp point estimation.

GCPR 2019

Seminar

From Research to Practice — Founding a Start-up after the Doctorate

 Organizer: **René Grzeszick**

MotionMiners GmbH,
Dortmund, Germany

Description. Focus of the seminar is the thematic framework
"From Research to Practice" and the creation of a start-up company out of a research topic. The seminar follows the example of
an EXIST Transfer of Research in the field of machine learning at
the Fraunhofer IML/TU Dortmund University. It describes the path
starting at a PhD topic at a university or research institute until the
first sold product. The seminar addresses PhD students, which are
interested in founding their own company, as well as professors that
would like to support a start-up project at their chair.

Note: As the seminar is built around funding and possibilities in Germany, it will be held in German.

GCPR 2019

Reception

Hövels Hausbrauerei Dortmund

The reception takes place at Hövels Brewery Dortmund from 7 to 9 pm of September 10th (Tuesday). The Hövels Brewery looks back on over a hundred years of history. It is part of the long and successfull beer and brewery tradition of Dortmund and offers excellent traditional-style indoor rooms and a spacious beer-garden.

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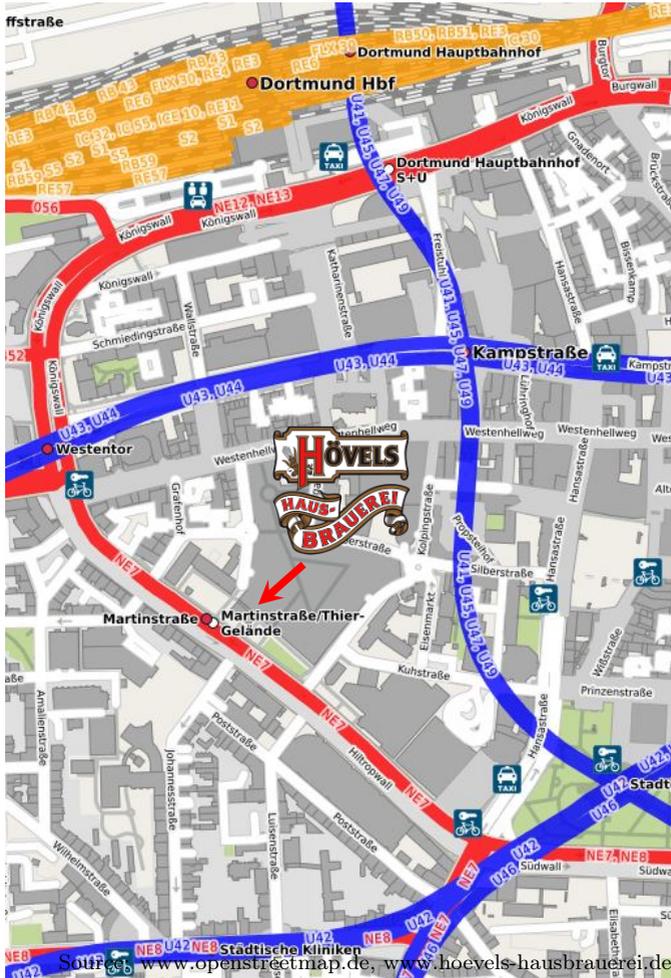Hoher Wall 5-7
44137 Dortmund

Arrival

The Hoevels Brewery is located about 5 km from the conference location and can be reached by public transport using the suburban train S1 from Dortmund Universität to Dortmund Hauptbahnhof. From hotels in the city, you can either enjoy a short walk or board subway U43 or U44 to Dortmund Westentor. Please see the map on the next page for how to get from the subway or main station to the event location.

More information about the Hoevels Brewery can be found on the brewery's homepage: `www.hoevels-hausbrauerei.de`.

Directions

Source: www.openstreetmap.de, www.hoevels-hausbrauerei.de

Reception

Conference Dinner

Signal Iduna Park Stadium, Room: Friedensplatz

The conference dinner takes place at **Friedensplatz Lounge**, inside the **Signal Iduna Park** Stadium, at **7:30 pm** on **September 12th** (Thursday). The dinner welcome desk will be located at the August-Lenz-Haus. Signal Iduna Park is home of the Ballspielverein Borussia 09 e.V. (commonly known as Borussia Dortmund, or BVB). It is Germany's largest football stadium and one of the most famous in Europe.

Address:
Signal Iduna Park
Strobelallee 50
44139 Dortmund

Arrival

The stadium is located about 6 km from the conference location and can be reached by public transport using the suburban train S1 from Dortmund Universität to Dortmund Hauptbahnhof and from there with the subway U45 to Dortmund Westfalenhallen. From hotels in the city, just board U45 to Dortmund Westfalenhallen at a station near your hotel. Please see the map on the next page for information about the way from the subway to the event location. The entrance to the August-Lenz-Haus is located at the north east corner of the stadium next to the Borusseum.

More information about the stadium as well as more detailed directions can be found on the official website of BVB Event & Catering GmbH: `http://event.bvb.de/`.

Directions

Source: www.event.bvb.de

Conference Dinner

Lunch

There are several possibilities for lunch on and near the university campus. The provided vouchers are valid in the following places:

- **Mensa:** Cafeteria of TU Dortmund University
- **Galerie:** Cafeteria, burgers and snacks in the Mensa building
- **Calla:** Restaurant in the Mensa building
- **Vital:** Restaurant in the Mensa building
- **Food Fakultät:** Pizza and pasta on the campus
- **ISM Mensa:** Cafeteria of the International School of Management

Additional options at your own expenses:

- **Pizza Tec:** Pizza and pasta
- **Bistro Tec:** Self-service restaurant

All locations are also marked on the map on page 40.

About...

...the City

Dortmund is an independent city in North Rhine-Westphalia, Germany. It is in the middle part of the state and is considered to be the administrative, commercial and cultural centre of the eastern Ruhr area. Its population of 581,612 (2015) makes it the 8th largest city in Germany. Moreover, Dortmund is the largest city in the Ruhr Area, an urban area with some 5.1 million (2011) inhabitants which is the largest urban agglomeration in Germany.

The city has been one of Germany's most important coal, steel and beer centres until the 1970s. The region has adapted since the collapse of its century long steel and coal industries and shifted to high technology biomedical technology, micro systems technology and also services. The city is known as Westphalia's "green metropolis". Nearly half the municipal territory consists of waterways, woodland, agriculture and green spaces with spacious parks This stands in a stark contrast with nearly a hundred years of extensive coal mining and steel milling within the city limits.

...the Technische Universität

With 6,200 employees in research, teaching and administration and its unique profile, TU Dortmund University shapes prospects for the future: the interaction between engineering and natural sciences as well as social and cultural studies drives both technological innovations and progress in knowledge and methodology. It is not only the roughly 34,500 students who benefit from this.

...the Department of Computer Science

The Department of Computer Science at TU Dortmund University is one of the largest in Germany, with particular strengths in research. Among similar institutions it is distinguished by a combination of fundamental research on formal methods with the development of practical applications. Research focuses on Algorithmics, Data Science, Cyber-Physical Systems, and Software and Service Engineering.

Conference Essentials

ATM The nearest ATMs are located in the Mensa building (Volksbank) and, from there, directly on the opposite side of the Vogelpothsweg (Sparkasse).

Awards The GCPR Best Paper Awards prize will be presented during the awards session on Friday.

Conference Dinner The conference dinner takes place at Signal Iduna Park Stadium in room Friedensplatz, at 7 pm of September 12th (Wednesday), see page 34 for further information.

Dentist There are several dentists in the area, e.g., Dr. Gunnar Bunte near the Linne Apotheke (cf. Pharmacy). Phone: +49 231 / 75 744.

Drugstore A drugstore is located in the entrance hall of the Dortmunder Hauptbahnhof (Rossmann).

H-Bahn The H-Bahn, TU Dortmund's driverless passenger suspension railway system connects the campuses, the suburban train S1, the district Dortmund-Eichlinghofen and the Technologiepark / Fraunhofer-Institut. A ticket for the local public transport which is valid to bring you to the campus is valid for the H-Bahn, as well. If you came by car, you can buy a ticket at the H-Bahn stations for $0{,}90\,€$ which is valid for 2 hours after voiding.

Invoice If you need an invoice for your registration payment, please contact the registration desk or send an email to `office@gcpr2019.org`.

Locations The tutorials and the seminar (Tuesday and Friday) are held in the building Otto-Hahn-Str. 14 (map entry (2) on page 40), the conference (Wednesday to Friday) in the seminar building Friedrich-Wöhler-Weg 6 (map entry (1)).

Medical Practitioner There are several doctors in the

GCPR 2019

surrounding area, e.g., Dr. Jutta Kempe-Husemann near the Linne Apotheke (cf. Pharmacy).
Phone: +49 231 / 75 60 68.

Parking A large parking lot can be found between Otto-Hahn-Straße and Meitnerweg (see map entry (14) on page 40).

Proceedings The conference proceedings will be published by Springer as volume no. 11824 of the LNCS series (Lecture Notes in Computer Science).

Reception The reception will be held in the Hövels Hausbrauerei Dortmund from 7 to 9 pm of September 10th (Tuesday), see page 32 for further information.

Supermarket The easiest way to reach a supermarket is taking the H-Bahn to Eichlinghofen. Then turn left for a REWE or right for a organic market (Fruchtbare Erde).

Taxi The phone number of the taxi office in Dortmund is +49 231 14 44 44.

Wi-Fi You have access to free Wi-Fi on the campus during the conference. If possible, use eduroam (`service.tu-dortmund.de/anleitungen-wlan`) or else the Wi-Fi Account on the backside of your name tag. In case of problems, please ask the assistants at the registration desk.

39   Conference Essentials

TU Dortmund Campus Map
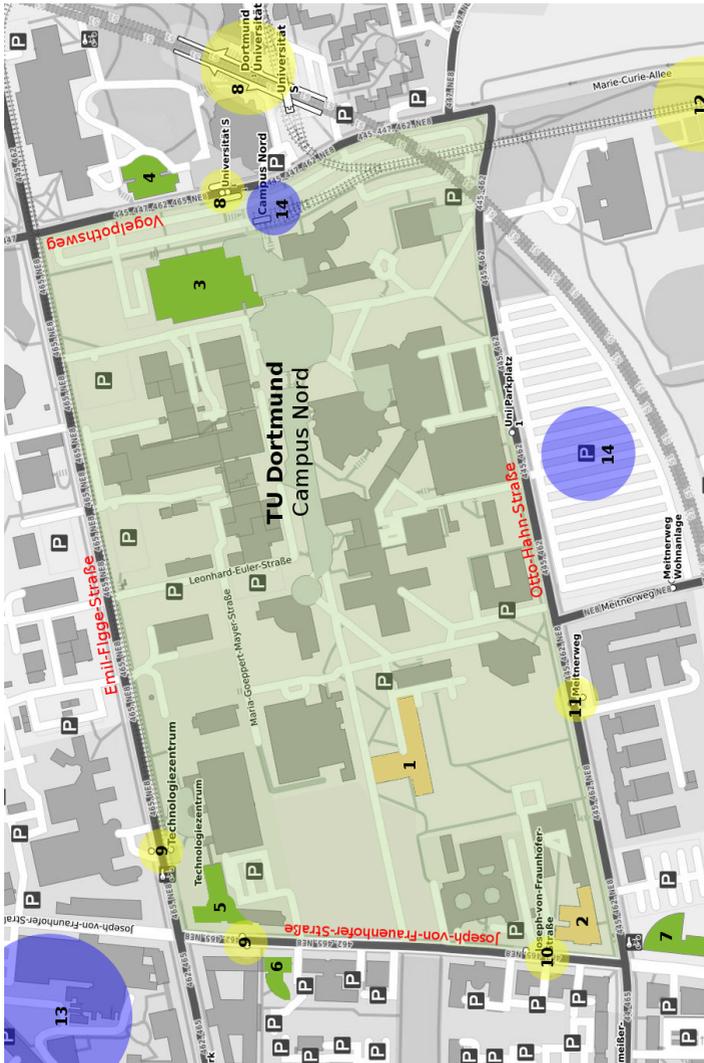
Conference and Workshops (orange)

1. Seminarraumgebäude I (Conference)
2. Otto-Hahn-Str. 14 (Tutorials)

Lunch (green)

3. Mensa, Calla, Vital, Galerie
4. Food Fakultät
5. Pizza Tec
6. Bistro Tec
7. ISM Mensa

Local Traffic Stations (yellow)

8. Dortmund Universität (S-Bahn, H-Bahn, Bus 445, 447, 462 and 465)
9. Technologiezentrum (H-Bahn, Bus 462 and 465)
10. Joseph-von-Fraunhofer-Straße (Bus 462 and 465)
11. Meitnerweg (Bus 445 and 462)
12. Eichlinghofen (H-Bahn, Bus 440 and 449)

Travelling by Car (blue)

13. Motorway A40
14. Parking

GCPR 2019

Personal Notes

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GCPR 2019

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