

# Welcome to ICCT 2017

The *International Conference on Companion Technology* provides a forum for researchers and practitioners to exchange and discuss all aspects of research, development, and applications of Companion Technology.

Companion Technology is an emerging field of cross-disciplinary research that aims at a paradigm shift in human-technology-interaction. It enables technical systems of any kind to smartly adapt their services to the individual needs of users, their current requests, situation, emotion, and disposition. Companion Technology covers and combines trans-disciplinary research in fields such as computer science and artificial intelligence, cognitive science, engineering, psychology, and neurobiology. Its application perspectives include all areas of digital assistance, examples being cognitive robotics, support for health and elderly care, intelligent environments, driver assistance, and autonomous driving.

ICCT 2017 is organized and sponsored by the IEEE Systems, Man, and Cybernetics Society and the Transregional Collaborative Research Centre SFB/TRR 62 funded by the German Research Foundation (DFG). The conference presents technical papers on a wide range of trans-disciplinary topics and includes keynotes as well as invited talks on trends and challenges from viewpoints of both science and industry.

Enjoy ICCT 2017 in Ulm!

## Conference Chair

Susanne Biundo, Ulm University, Germany

## Program Chair

Andreas Wendemuth, Otto-von-Guericke University Magdeburg, Germany

## Program Committee

Adriano Andrade, Federal University Uberlandia, Brazil  
Elisabeth André, University of Augsburg, Germany  
Panagiotis Bamidis, Aristotle University of Thessaloniki, Greece  
Susanne Biundo, Ulm University, Germany  
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Kristiina Jokinen, University of Helsinki, Finland  
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Andreas Nürnberger, Otto-von-Guericke University Magdeburg, Germany  
Thierry Pun, University of Geneva, Switzerland  
Albert Ali Salah, Bogazici University, Istanbul, Turkey  
Björn Schuller, Technical University of Munich, Germany  
Friedhelm Schwenker, Ulm University, Germany  
Jianhua Tao, Chinese Academy of Sciences, Beijing, China

## Local Chairs

Barbara Panzer, Ulm University, Germany  
Stephan Reuter, Ulm University, Germany

# General Information

## Venue

Ulm University Campus,  
Research Building N27,  
Meyerhofstraße, Ulm

## Quick Contact

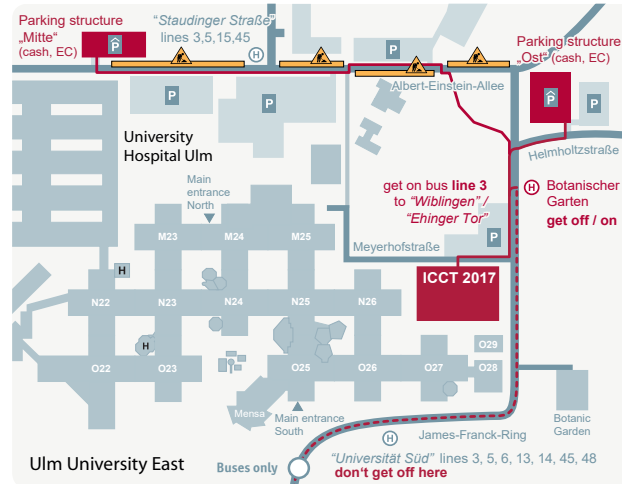
ingrid.neumann@uni-ulm.de  
+49 731 50 24258

## Wi-Fi-Access

Login **data@registration**  
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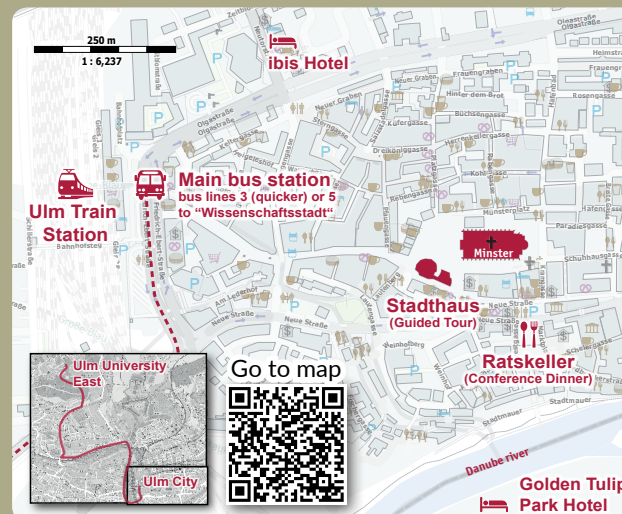


Visitor parking in the  
two designated parking  
structures only.  
(Cash and EC card only)



## Locations in Ulm City

The map shows all relevant locations in Ulm City for the participants of ICCT 2017. This includes hotels, public transportation to Ulm University and meeting points for social events.



# ICCT 2017

## International Conference on Companion Technology



September 11th - 13th

Ulm University, Germany

# Conference Program

## Day 1 - Monday, Sep 11, 2017

- 08:30** Registration
- 09:00** Welcome and Introduction
- 09:15** **Keynote 1**  
Modeling Human Communication Dynamics  
Louis-Philippe Morency  
Language Technology Institute, Carnegie Mellon University, Pittsburgh PA, USA
- 10:45** Coffee <sup>1</sup>
- 11:15** **Session 1: Strategy, Cognition, Models**
- Neurobiological Fundamentals of Strategy Change – A Core Competence of a Companion System  
A. Schulz, M. Woldeit, M. Brosch, F. Ohl
  - Preliminary Classification of Cognitive Load States in a Human Machine Interaction Scenario  
A. Oschlies-Strobel, S. Gruss, L. Jerg-Bretzke, S. Walter, D. Hazer-Rau
  - Pupil-Assisted Target Selection (PATS): State of the Art and Future Prospects  
C. Strauch, J. Ehlers, A. Huckauf
  - Requirements for a Companion System to Support Identifying Irrelevancy (Position Paper)  
M. Siebers, K. Göbel, C. Niessen, U. Schmid
  - Embedding of the Personalized Sentiment Engine PERSEUS in an Artificial Companion (Position Paper)  
S. Guo, C. Schommer
- 13:00** Lunch <sup>1</sup>
- 14:00** **Session 2: Affective Signals**
- Stereotyped Gesture Recognition: An Analysis between HMM and SVM (Position Paper)  
M. Y. Camada, J. Cerqueira, A. M. Lima
  - Accelerating Manual Annotation of Filled Pauses by Automatic Pre-Selection  
O. Egorow, A. Lotz, I. Siegert, R. Böck, J. Krüger, A. Wendemuth
  - Inferring User's Search Activity Using Interaction Logs and Gaze Data  
J. Schwerdt, M. Kotzyba, A. Nuernberger
  - Multimodal Fusion including Camera Photoplethysmography for Pain Recognition  
V. Kessler, P. Thiam, M. Amirian, F. Schwenker
- 15:30** Coffee <sup>1</sup>
- 16:00** **Trends & Challenges 1**  
Towards Human State Assessment for Cooperative Human-Cyber-Physical Systems  
Jochem Rieger  
Applied Neurocognitive Psychology Lab, University of Oldenburg, Germany
- 16:45** **Industry Talk 1**  
Paradigm Shift in Automotive User Interfaces  
Frank Uhlig  
e.solutions GmbH, Ulm, Germany
- 17:30** End of Program of Day 1
- 19:00** **Conference Dinner**  
Best Paper Award Presentation

<sup>1</sup> Poster presentations and discussion with summer school participants during all breaks



Online Program and Proceedings  
<http://icct2017.companion-technology.org/>

## Day 2 - Tuesday, Sep 12, 2017

- 08:30** Registration
- 09:00** **Keynote 2**  
Intelligent Machines – Intelligent Humans  
Who Changes Whom  
Klaus Bengler,  
Chair of Ergonomics, Technical University Munich, Germany
- 10:30** Coffee <sup>1</sup>
- 11:00** **Session 3: Planning and Decision Making**
- SLOTH – The Interactive Workout Planner  
G. Behnke, F. Nielsen, M. Schiller, P. Bercher, M. Kraus, B. Glimm, W. Minker, S. Biundo
  - How to Manage Affective State in Child-Robot Tutoring Interactions?  
T. Schodde, L. Hoffmann, S. Kopp
  - Help Me Make a Dinner! Challenges When Assisting Humans in Action Planning  
G. Behnke, B. Leichtmann, P. Bercher, D. Höller, V. Nitsch, M. Baumann, S. Biundo
  - A Paradigm for Coupling Procedural and Conceptual Knowledge in Companion Systems (Position Paper)  
M. Schiller, G. Behnke, M. Schmautz, P. Bercher, M. Kraus, W. Minker, B. Glimm, S. Biundo
- 12:30** Lunch <sup>1</sup>
- 13:30** **Trends & Challenges 2**  
Trends in Applications of Companion Technology to Space Exploration  
Adrian Stoica,  
NASA Jet Propulsion Laboratory and California Institute of Technology, Pasadena, CA, USA
- 14:15** **Industry Talk 2**  
Adaptive User Interfaces: From Vehicle Components to Transport Networks  
Stas Krupenia,  
Styling and Vehicle Ergonomics, Scania AB, Södertälje, Sweden
- 15:00** Coffee <sup>1</sup>
- 15:30** **Demonstration**  
BMW Car IT GmbH, Ulm, Germany
- 18:00** End of Program of Day 2
- 19:00** Guided tour through the old town of Ulm

## Social Events

**Conference Dinner**  
Monday, Sept. 11, 2017 - 19:00  
Ratskeller Restaurant <sup>2</sup>  
Marktplatz 1, 89073 Ulm  
+49 731 8801740

**Guided tour through the old town of Ulm**  
Tuesday, Sept. 12, 2017 - 19:00  
Meeting Point: Stadthaus Ulm <sup>2</sup>  
Münsterplatz 50, 89073 Ulm

<sup>2</sup> see map on the backside for directions



## Day 3 - Wednesday, Sep 13, 2017

- 08:30** Registration
- 09:30** **Keynote 3**  
Prosodic Entrainment and Social Impact  
Julia Hirschberg,  
Spoken Language Processing Group, Columbia University, NY, USA
- 10:30** Coffee <sup>1</sup>
- 11:00** **Session 4: Systems**
- Adaptive Mobile Behavior Change Intervention Using Reinforcement Learning (Position Paper)  
L. Cai, C. Wu, K. J. Meimandi, M. Gerber
  - Adaptive Dynamic Network Architectures for Companion Systems (Position Paper)  
C. Jarvers, H. Neumann
  - Dialogues with IoT Companions Enabling Human Interaction with Intelligent Service Items (Position Paper)  
K. Jokinen, S. Nishimura, K. Fukuda, T. Nishimura
  - Possible Applications of Companion Systems in Psychotherapy – Perspectives on a New Technology (Position Paper)  
S. Walter, A. Oschlies-Strobel, M. Hasse, H. Traue, K. Limbrecht-Ecklundt, L. Jerg-Bretzke
- 12:00** **Trends & Challenges 3**  
Challenges in Cognition-Based Human-Robot Collaboration  
Joachim Hertzberg,  
Osnabrück University and DFKI Robotics Innovation Center, Osnabrück Branch, Germany
- 12:45** Lunch <sup>1</sup>
- 13:45** **Industry Talk 3**  
Context is King  
Axel Platz,  
User Interface Design, Siemens AG Corporation Research, Munich, Germany
- 14:30** **Panel**  
**Companion Technology – The Way Ahead**  
(Invited Speakers, Chairs)
- 15:45** **Participants' Townhall Meeting**  
**Best Presentation Award Ceremony**  
Closing Remarks, Coffee, Farewell
- 16:30** End of Conference

## Local Information

Ulm, founded 854, is rich in history and traditions as a former Free Imperial City. Internationally, Ulm is primarily known for having the church with the tallest steeple in the world, the Gothic minster (German: Ulmer Münster) and as the birthplace of Albert Einstein.

The steeple measures 161.5 metres (530 ft), containing 768 steps. From the top level at 143 m (469 ft) there is a panoramic view of Ulm and Neu-Ulm in Bavaria and, in clear weather, a vista of the Alps. The final stairwell to the top (known as the third Gallery) is a tall, spiraling staircase that has barely enough room for one person. Entrance to the minster is free, entrance to the teepel costs 5€.



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Ulmer Minster, tallest church in the world