



RoboCup

LEIPZIG
GERMANY

2016

30 JUNE to 3 JULY COMPETITIONS
4 JULY SYMPOSIUM

Participants
Booklet

For RoboCuppers!

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Dear RoboCuppers, welcome to RoboCup 2016 in Leipzig!

2016 is special for RoboCup in two ways: For one, it is the 20th RoboCup. Since we started RoboCup 20 years ago, we made impressive progress to realize our dream, which is a fully autonomous robot soccer team that can win against the human champion team. I am excited to see the achievements of your research in the next few days. For two, we are again in a big epoch for AI. This March, the AlphaGo system won against Lee Se-Dol, one of the top professional GO players in the world.

RoboCup started in 1997, the same year as the Deep Blue chess program won against Garry Kasparov, the human chess champion. Since then, we have demonstrated innovative research on AI and robotics using competitions of playing soccer, helping people in disaster response, supporting people at homes, in offices, and in factories. Many challenges still remain open and need to be solved. It is now our turn to create another big epoch for AI and robotics.

In scientific research, continuity is an important factor. People tend to think that progress in AI and robotics happens in big steps. However, progress is the result of continuous research efforts over long periods.

I'm proud of our continuity of these 20 years, and I'm confident that the continuity will be handed over from Major participants to Junior participants.

This year, we introduce new „outdoor challenges“. Our aim is to force teams to tackle the difficulties of real-world problems. This still is a hard task for robots, but we must start facing such difficulties. Also, we will have new challenges and trials in each leagues. I hope that we all will generate many new ideas towards future developments. Finally, I like to thank all our local and worldwide sponsors for their great and continued support.

Please enjoy RoboCup!



Dr. Itsuki Noda
President of RoboCup Federation



Dear RoboCuppers,

On behalf of the Local Organizing Committee I cordially welcome you to RoboCup 2016 in Leipzig!

RoboCup displays a wide range of robotics technologies and applications by running scientific competitions in 14 different leagues. The performance of the teams shown at RoboCup is the result of a team development effort covering mostly a whole year, with countless hours put into it by students and faculty. Aside of all the scientific and technical development, the RoboCup teams also do a tremendous job on training excellent young engineers and giving them an opportunity to develop team work and leadership skills. The Local Organizing Committee has worked hard to provide the best working conditions for all the participating teams, so that your robots can perform well and show their best performance ever during this RoboCup.

And we hope you will also enjoy the event and find the time to explore Leipzig.

It is a lively city with warm and friendly people, and a great deal of interesting history. Do not miss it.

Prof. Dr. Gerhard Kraetzschmar
General Chair, RoboCup 2016



Dear Participants,

Robots are the embodiment of the focus on the future and the innovative spirit. Both of these aspects are promoted in Germany. With our new high-tech strategy, we want to continue to expand Germany's leading position among the world's innovation leaders. The objective of this high-tech strategy is to quickly transfer good ideas into innovative products and services, to not just improve our lives, but also to make our lives easier. To continue to be innovative in the future, we need young people with ideas and creativity. RoboCup offers a chance to create excitement among young people for technology and informatics. In this way, the competition supports the promotion of young talent, which will be urgently needed in the future. At the same time, RoboCup encourages participants to take a look at other questions that go hand in hand with the issues of the day, such as civilian safety and intelligent mobility. They work on solutions that contribute to society's progress. I look forward to your ideas. All participants, I wish you maximum success in the competitions.

Prof. Dr. Johanna Wanka

Federal Minister for Education and Research



Dear Participants,

Robots have fascinated young and old for a very long time. With its challenging vision, the international RoboCup community generates impressive results, and by doing so shows what science and technology are already able to do today. In that context, the applicability of these results for industry and the economy, as well as the promotion of young talent, play a very important role. That is a very good fit for us here in Saxony, as the state has traditionally been the land of technology, and has been particularly successful in the future field of micro-electronics. That is not least due to the excellent connections between industry and science in Saxony's Clusters – a key site factor of the free state and the optimal breeding ground for high-tech developments „Made in Saxony“. Investments in innovations are investments in the future, and the fuel that drives economic growth. That's why the free state provides targeted support to research and development projects and cooperations between Saxon companies and research institutions. Therefore it is not just in our role as host but also as an innovative research location that we welcome the world championships of robots and artificial intelligence as an event that generates new ideas and provides a jump start towards a sustainable future. Welcome!

Martin Dulig

Minister of State for Economic Affairs, Labour and Transport in Saxony



Dear Participants,

Following the great experience at the world championships in Brazil and the exciting decision in favor of Leipzig, we now look forward to hosting this year's 20th RoboCup World Championships.

During its 1000-year history, Leipzig has always been a trendsetter. The city has made its mark as a fast-growing business location, and in addition to being the home of Germany's second-oldest university, also boasts a diversified post-secondary education and research sector. Approximately 40,000 students at various post-secondary institutions are driving forward ideas and innovative processes with their curiosity and pioneering spirit. Both the vision and building blocks for our future are established at important research institutions such as the Max-Planck-Institut, BioCity, the science park and the Fraunhofer institutes – making Leipzig a very representative setting for hosting the world championships of robots. The RoboCup World Championships are certain to draw large numbers of interested and enthusiastic individuals.

Come to Leipzig and spend some time in our city. Go on a journey of discovery through our impressive musical history or get a sense of the peaceful revolution of 1989, and immerse yourself in the diverse and first-class culture of our lively and growing city. Welcome!

Burkhard Jung
Mayor of the City of Leipzig



Dear Participants,

The history of Leipziger Messe goes back more than 850 years. As one of the world's oldest trade fair locations, we combine tradition with innovative power. Using our experience, professionalism and passion, we always identify new trends and organize more than 215 events every year, including events in robotics, machine building and medical technology. Last year, 11,000 exhibitors and more than 1.1 million visitors from all over the world came to Leipzig, making us one of the ten leading trade fair companies in Germany, and among the top 50 in the world. Innovations are a part of our daily life, and drive our actions. Accordingly, we have prepared the RoboCup together with the RoboCup Federation with the highest level of professionalism and a lot of passion. We are very pleased to be this year's home of the RoboCup, and to celebrate the 20 year anniversary with you. This world championship of robots is unique in that it highlights technical progress while at the same time driving forward issues that are relevant to society. We are all driven by innovation. I am pleased to see that these synergies are now finding a common expression. I wish you much success in Leipzig. Come and experience the spirit of a modern communication venue, and take it home with you. Welcome to Leipzig and the Leipzig exhibition grounds!

Markus Geisenberger
Chief Executive Director, Leipzig Trade Fair



The Supporters, Sponsors and Partners of RoboCup 2016

The extensive RoboCup program could not have been developed without the outstanding support of policy-makers, businesses and the science sector.

We would like to take this opportunity to extend a special thanks to all regional, national and international supporters and partners for their commitment.

Organized by:



Supported by:



RoboCamp organized by:



Gold Sponsor:



Global Sponsors:



Silver Sponsors:



Hardware Partner:



Bronze Sponsors:



Global Logistics Partner:



Friends:



Further Partners

Initiative „MINT ZUKUNFT SCHAFFEN“, Bitkom e.V, German Association of Robotics (DGR), euRobotics Aisbl, Silicon Saxony e.V., Cluster Informationstechnologie Mitteldeutschland e.V., WorldSkills Germany e.V., HTWK Leipzig - Leipzig University of Applied Sciences, Bonn-Rhein-Sieg University of Applied Sciences, TU Darmstadt, University of Bonn, TU Dresden, TU Chemnitz, MINT-Netzwerk Leipzig, marketingmoves, Informatik DV GmbH, mdr - Mitteldeutscher Rundfunk, L-Leipziger Gruppe, Berufsförderungswerk Leipzig gemeinnützige GmbH, Otto-von-Guericke-University Magdeburg

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RoboCup 2016 Leipzig – Best Place for Robots and Friends!

RoboCup is the leading and most diverse competition for intelligent robots and one of the world's most important technology events in research and training. The World Cup of intelligent robots combines a variety of interdisciplinary challenges from robotics, artificial intelligence, informatics, as well as electrical and mechanical engineering, among others. Ever since 1997, the RoboCup Federation has been pursuing its objective of developing intelligent humanoid soccer-playing robots which by 2050 will be able to beat the current FIFA champions. In 2016, the 20th RoboCup is the second one to take place in Germany.

The Teams of RoboCup

The vision of RoboCup is supported by a unique worldwide community of teams. These found the basis of RoboCup and constitute its exceptional strength. Stemming from quite diverse geographical regions and cultural backgrounds they join the competitions in a cooperative manner creating an unparalleled friendly and enthusiastic atmosphere.

RoboCup 2016 in Leipzig has attracted a high number of 466 qualified teams in Major and Junior categories. Teams from at least 38 countries will be participating (Status: 16-5-21).

Leipzig welcomes teams from Africa, America, Asia, Australia and Europe.

RoboCup 2016

RoboCup

Major

Soccer
Rescue
@Home
Industrial

Junior

Soccer
Rescue
OnStage

Symposium

Co-located Events

Call for
@Home
Standard
Platform

Amazon
Picking
Challenge

Interactive Events

RoboCamp

Robotino
Workshop

Outdoor
Activities

STEM Exhibition

Exhibition
Recruiting
for
Mobility 4.0

Scientific Program and Events

Conference
Round Table
and
Workshops

Facts & Figures

Running Times:

Exhibition and competitions: **June 30 to July 3, 2016**

Symposium (for registered participants): **July 4, 2016**

Event Location: **Leipzig Trade Fair, Leipzig / Germany**

The Leagues of RoboCup

RoboCup Soccer

In all leagues, the robots act autonomously and play without human intervention.

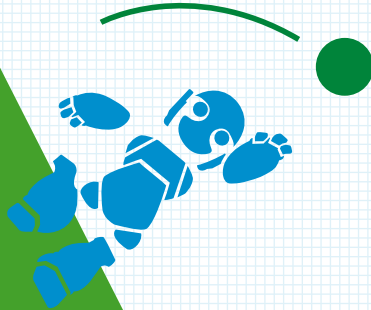


Photo Albert van Breemen

Humanoid League:

Teams of up to four autonomous humanoid robots play soccer in three size classes. The required human-like body plan poses tough challenges in terms of motion dynamics and perception. www.robocuphumanoid.org

Standard Platform League:

Teams of up to five autonomous humanoid robots play soccer. Only Nao robots from SoftBank Robotics (former Aldebaran) are admitted as players. Software development is the key factor.

<http://www.tzi.de/spl/>



Middle Size League:

Teams of up to six completely autonomous, wheeled robots play soccer with an official FIFA ball. All sensors, computers etc. must be on board of the robots.

wiki.robocup.org/wiki/Middle_Size_League



Photo Bart van Overbeke



Photo Bart van Overbeke

Small Size League:

Teams of five small robots play soccer with a golf ball. Cameras above the field of play deliver data on the state of play, a computer controls the robots via radio communication. robocupssl.cpe.ku.ac.th/

Soccer Simulation League:

Teams of eleven simulated humanoid robots play virtual soccer in 2D and 3D. A complex physics engine enables realistic simulation of the players and the ball.

wiki.robocup.org/wiki/Soccer_Simulation_League



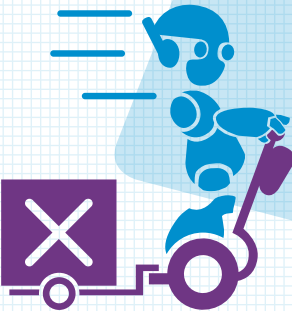
Photo Bart van Overbeke



RoboCup Industrial

RoboCup Industrial defines a common framework for industry-inspired application leagues within RoboCup. It defines an umbrella for different, complementary approaches in the sense of industrial applications under which different sub leagues can develop independently but at the same time leverage opportunities for cooperation, common infrastructure, and also common tasks.

RoboCup Logistics League



Teams of three robots have to plan, execute and optimize the material flow and deliver products according to dynamic orders in a smart factory environment. www.robocup-logistics.org

RoboCup@Work League



Mobile manipulators – mobile robots with industrial robot arms – cooperate with and assist humans in the Factory of the Future: Industry 4.0. www.robocupatwork.org





KUKA

Creating a
new robotic
world



Creating the European Robotics League –
see where it all begins!
Meet us in hall 4 booth A24
www.european-robotics-league.eu

Research in Robotics



Mobile robot platform for
research and training: Robotino ®

Live at the RoboCup Industrial - Logistics League
festo-didactic.com





RoboCup Rescue

RoboCup Rescue has been introduced in 2001 based on an aftermath analysis of the Kobe earthquake in Japan. It addresses fundamental research and development topics by providing standardized environments and benchmarks for rescue robots. These tests represent major challenges typically encountered in urban search and rescue scenarios such as navigating uneven terrain, climbing stairs or opening doors.

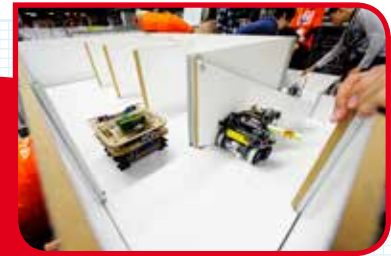
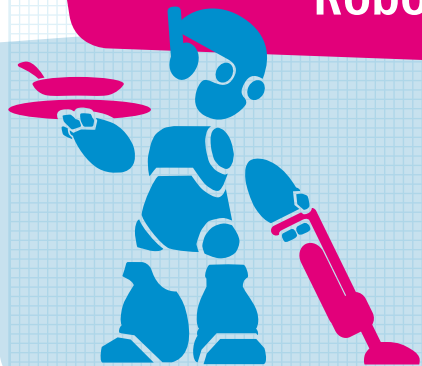


Photo Bart van Overbeke

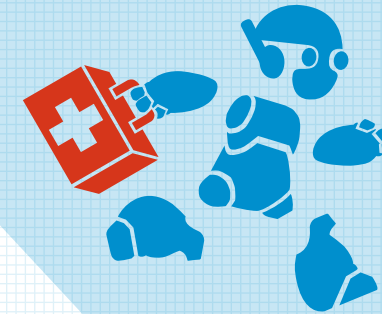


RoboCup@Home League



Autonomous mobile service robots support elderly people and people with disabilities in domestic environments such as private homes, elderly care units, or in public spaces such as shopping centers. Robots can execute actions on behalf of the user, or interactively support the user in her/his actions.

www.robocupathome.org



Rescue Robot League:

considers mobile and intelligent robots that assist first responders in assessing and responding to an emergency situation, like searching for potential victims and automated mapping of the environment.

Rescue Simulation League:

targets disaster response challenges for single robots as well as for multiple agents in virtual scenarios.

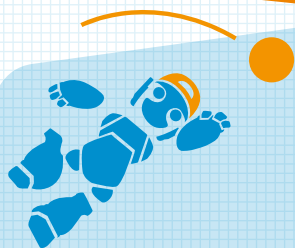
wiki.robocup.org/wiki/Rescue_Simulation_League





RoboCupJunior

RoboCupJunior is a project-oriented educational initiative that organizes local, regional and international robotic events for young students. It introduces RoboCup to primary and secondary school children. RoboCupJunior offers several challenges, each emphasizing both cooperative and competitive aspects. For young students, RoboCupJunior provides an exciting introduction to the field of robotics, a new way to develop technical abilities through hands-on experience with electronics, hardware and software, and a highly motivating opportunity to learn about teamwork while sharing technology with friends. wiki.robocup.org/wiki/Junior

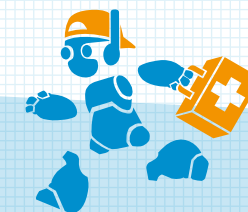


Soccer:

As part of the RoboCupJunior soccer challenge, teams of two autonomous mobile robots compete against another team in matches. They must look for an infrared-light-emitting ball, trying to score into a color-coded goal in a specially designed field. Robots are required to have full autonomy, technical designs, and ingenious programming by their developers.



Photo Bart van Overbeeke



Rescue:

The robot must be strong and smart enough to navigate through treacherous terrain with hills, uneven grounds and rubbles without getting stuck. When the robot finally finds the victim, it has to gently and carefully transport the victim to the safe evacuation point where humans can take over. In Rescue, the juniors will compete in the disciplines Line, Maze and CoSpace.

OnStage:

RoboCupJunior OnStage invites teams to create a robotic performance on a stage. A broad range of technologies can be used to create the performance. Jury members evaluate the complexity of the robots, their programming and the technical implementation of the performance.

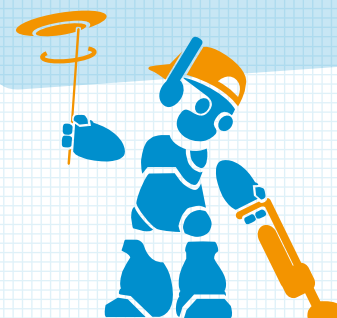


Photo Albert van Breemen

Schedule of Major and Junior Finals

July 3, 2016

Hall 2: Major Soccer Access for teams at 07:00

Middle Size League

09:30 Semi Final 1
11:00 Semi Final 2
13:30 3rd Place
15:00 Final
15:45 Trustee Game

Small Size League

09:00 Semi Final 1
10:30 Semi Final 2
12:30 3rd Place
14:00 Final



Soccer Simulation League

09:00 2D Quarter Final 1
09:15 2D Quarter Final 2
09:30 2D Quarter Final 3
09:45 2D Quarter Final 4
10:15 3D Semi Final 1
10:30 3D Semi Final 2
10:45 2D Semi Final 1
11:00 2D Semi Final 2
12:30 3D Final
12:45 2D Final
13:30 Playbacks

Standard Platform League

09:00 Semi Final 1
09:45 Semi Final 2
12:00 3rd Place
13:30 Final
15:15 All Star Game



Humanoid League - Kid

09:00 Semi Final 1
10:00 Semi Final 2
12:45 3rd Place
14:15 Final

Humanoid League - Adult

09:30 3rd Place
12:00 Final

Humanoid League - Teen

10:45 3rd Place
13:30 Final

all Major Teams

17:00 Major Awards
19:00 Banquet
21:00 Major Party

Access for teams at 07:00

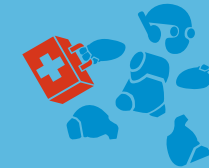
Hall 4: Major Application

Rescue Simulation League

12:00 Virtual Final
13:00 Agent Final

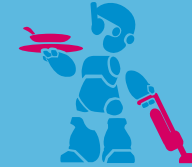
Rescue Robot League

09:00 RescueOutdoor Final
12:30 Rescue Final



RoboCup@Home League

11:30 Final



RoboCup@Work League

09:15 Finals



RoboCup Logistics League

11:30 Small Final
12:15 Final

all Major Teams

17:00 Major Awards
19:00 Banquet
21:00 Major Party

Access for teams at 07:00

Hall 4: RoboCupJunior

Junior Soccer

09:30 Final Round Open
10:15 SuperTeam Games
12:00 SuperTeam Final

Junior Rescue

09:30 SuperTeam Final

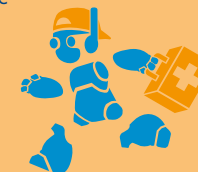


Junior OnStage

09:30 Primary SuperTeam Challenge
11:00 Secondary SuperTeam Challenge

Junior CoSpace

11:00 SuperTeam Final



all Junior Teams

14:30 Junior Awards

Symposium

July 4, 2016, Hall 1 @ CCL

The Annual International RoboCup Symposium is a premier venue for the presentation and discussion of scientific contributions to a variety of research areas related to the RoboCup competitions. Its scope includes, but is not restricted to, research and educational activities in robotics and artificial intelligence. To encourage open-source release of hardware and software components, a special track on open-source development is an integral part of the Symposium.

A total of 63 submissions were considered this year, from which 14 orals and 23 posters were selected for presentation. This year, we will have three invited speakers:

Prof. Martin Riedmiller, Google Deepmind

Prof. Davide Scaramuzza, University of Zurich

Prof. Ruzena Bajcsy, UC Berkeley

We would like to thank everybody who made a contribution and wish everyone a pleasant stay in Leipzig.

Co-chairs of the 20th RoboCup International Symposium 2016



Sven Behnke



Raymond Sheh



Sanem Sariel



Daniel D. Lee

Invited Speakers



Martin Riedmiller

Intelligence scores goals – Machine Learning for autonomous robots

Abstract: In 1998, the Brainstormers entered the RoboCup Simulation League with the goal to investigate the usefulness of machine learning methods in intelligent soccer playing agents. I will review our approach of an intelligent control architecture that was applied successfully in four different RoboCup leagues. A particular focus will be put on neural network based reinforcement learning methods, which was our core technique from the very beginning. I will discuss more recent developments of Deep Reinforcement Learning in the context of moving towards general Artificial Intelligence.

Biography: Martin Riedmiller has been heading the Machine Learning Lab at the University of Freiburg since 2009. Recently, he has left the Machine Learning Lab and will now be taking a research position at Google Deepmind. His general research interest is applying machine learning techniques to interesting real world problems.



Davide Scaramuzza

Towards Agile Flight of Vision-controlled Micro Flying Robots: from Active Perception to Event-based Vision

Abstract: Quadrotors have the potential to navigate quickly through unstructured environments. However, agile navigation through unknown, indoor environments poses a number of challenges in terms of perception, planning, and control. In this talk, I will give an overview of my research activities on visual inertial navigation and active perception with quadrotors during agile flight using event-based cameras.

Biography: Davide Scaramuzza is Professor at the University of Zurich, where he researches at the intersection of robotics, computer vision, and neuroscience. He led the European project “sFly”, which introduced the world’s first autonomous navigation of micro drones in GPS-denied environments using vision as the main sensor modality. For his research contributions he was awarded the IEEE Robotics and Automation Early Career Award.



Ruzena Bajcsy

Framework for Individualized Dynamical Modeling of Human Motion

Abstract: We are developing individualized musculoskeletal models to model movement dynamics based on non-invasive, multi-modal measurements (e.g., motion capture, accelerometry, EMG). The models are aimed to provide information on kinematic constraints and dynamic parameters relating to exerted forces and torques during a movement. Furthermore, we are developing automatic segmentation methods that partition continuous movement into motion primitives.

Biography: Ruzena Bajcsy is a Professor of Electrical Engineering and Computer Sciences and NEC chair holder at the University of California, Berkeley. She received the ACM/Association for the Advancement of Artificial Intelligence Allen Newell Award, the Benjamin Franklin Medal for Computer and Cognitive Sciences, and the IEEE Robotics and Automation Award for her contributions in the field of robotics and automation. She was named as one of the 50 most important women in science by Discover Magazine.

Schedule



- 08:50 – 09:00 Welcome and Greetings**
- 09:00 – 09:50 Keynote 1: Martin Riedmiller**
Intelligence scores goals – Machine Learning for autonomous robots
- 09:50 – 10:14 Oral Session 1**
Arne Böckmann and Tim Laue
Kick Motions for the NAO Robot using Dynamic Movement Primitives
Abbas Abdolmaleki, David Simoes, Nuno Lau and Luis Paulo Reis
Learning a Humanoid Kick With Controlled Distance
- 10:14 – 10:25 Poster teasers**
- 10:25 – 11:15 Poster Session with coffee break**
- 11:15 – 12:05 Keynote 2: Davide Scaramuzza**
Towards Agile Flight of Vision-controlled Micro Flying Robots: from Active Perception to Event-based Vision
- 12:05 – 12:29 Oral Session 2**
Leonardo Lanari, Oliver Urbann, Seth Hutchinson and Ingmar Schwarz
Boundedness Approach to Gait Planning for the Flexible Linear Inverted Pendulum Model
Andreas Seekircher and Ubbo Visser
A Closed-Loop Gait for Humanoid Robots Combining LIPM with Parameter Optimization

- 12:29 – 12:40 Poster teasers**
- 12:40 – 14:00 Lunch and poster session**
- 14:00 – 14:50 Keynote 3: Ruzena Bajcsy**
Framework for Individualized Dynamical Modeling of Human Motion
- 14:50 – 15:38 Oral Session 3**
Philip Cooksey, Juan Pablo Mendoza and Manuela Veloso
Opponent-aware ball-manipulation skills for an autonomous soccer robot
Daniel Speck, Pablo Barros, Cornelius Weber and Stefan Wermter
Ball Localization for Robocup Soccer using Convolutional Neural Networks
Alexander Hagg, Frederik Hegger and Paul Gerhard Plöger
On Recognizing Transparent Objects in Domestic Environments Using Fusion of Multiple Sensor Modalities
M. Hossein Mirabdollah, Mahmoud Mohamed and Bärbel Mertsching
Distributed Averages of Gradients (DAG): A Fast Alternative for Histogram of Oriented Gradients
- 15:38 – 15:50 Poster teasers**
- 15:50 – 16:40 Poster Session with coffee break**



Photo: Albert van Boven

16:40 – 17:52 **Oral Session 4**

Yusuke Adachi, Masahide Ito and Tadashi Naruse

Classifying strategies of an opponent team based on a sequence of actions in RoboCup SSL

Michael Grupp, Philipp Kopp, Patrik Huber and Matthias Rättsch

A 3D Face Modelling Approach for Pose-Invariant Face Recognition in a Human-Robot Environment

Patrick MacAlpine and Peter Stone

UT Austin Villa RoboCup 3D Simulation Base Code Release

Thomas Gabel, Egbert Falkenberg and Eicke Godehardt

Progress in RoboCup Revisited: The State of Soccer Simulation 2D

Sebastian Zug, Tim Niemueller, Nico Hochgeschwender, Kai Seidensticker, Martin Seidel, Tim Friedrich, Tobias Neumann, Ulrich Karras, Gerhard Kraetzschmar and Alexander Ferrein

An Integration Challenge to Bridge the Gap among Industry-inspired RoboCup Leagues

Remi Fabre, Quentin Rouxel, Passault Gregoire, Steve N'Guyen and Olivier Ly. Dynaban

Open-Source Alternative Firmware for Dynamixel Servo-Motors

17:52 – 18:00 **Award Ceremony**

18:00 **Farewell Party**

Workshop on Education Robotics

July 4, 2016, Hall 4 @ CCL



The Workshop on Educational Robotics (WEROB) aims at bringing together teachers, mentors, and students from schools, clubs, community centers, and educational institutions offering formal and informal educational robotics learning opportunities to students, to showcase and discuss their experiences, accomplishments, and current practices using robotics.

This workshop also hopes to provide a place to share relevant projects and discuss specific technical issues that may arise in different learning setting as well as the impact of robotics in education. The workshop contains various presentations by mentors/teachers on their research and/or practice, or by students/team on their accomplishments and developments.

This hands-on workshop introduces and teaches new robotics tools and/or ideas and includes RoboCup Symposium invited talks/keynotes.



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SoftBank

Hall 2
Stand no. A15

NAO

The new teachers' ally that helps students to learn about programming.

Learn more at: www.ald.softbankrobotics.com

Co-located Events

Call for @Home Standard Platform

The RoboCup@Home league has been offering an up-to-date overview of the state of research in the segment of intelligent household robots since 2006. The RoboCup@Home standard platform will be initiated in 2017. While the competitions to date have allowed for the free selection of hardware and software, the new RoboCup@Home Standard Platform League will feature uniform hardware in the future. Now, solely the quality of the software development will decide which robots exhibit superior skills. The six finalist companies will be presenting their prototypes at RoboCup 2016. Subsequently, the RoboCup Federation will make the final decision on the hardware for the new RoboCup@Home Standard Platform League.



ERL Kickoff Event

Introducing the European Robotics League (ERL), RoboCup 2016 will see the launch of a novel international competition format that includes the ERL Service Robots and the ERL Industrial Robots competitions, two of the leagues three associated domains. The ERL Kickoff Event will be on Thursday, June 30, within the RoboCup@Home competition area.



RoboCamp

RoboCamp invites 160 children and youth to experience the fascinating world of robots from 30 June to 2 July. At this three-day workshop, four-member teams will design their own little Bot'n Roll robot under expert supervision, and will subsequently face off against each other in a competition. Participants can also look forward to daily sports and recreational programs. RoboCamp is organized by the Leipzig Chamber of Commerce and Industry (IHK zu Leipzig), and makes an important contribution to the promotion of young STEM talent in the Leipzig region.



Outdoor activities at RoboCup 2016

RoboCup promises not just top performances for the mind; participants are also given the chance to exercise their bodies in the outdoor area and can become soccer stars themselves. The Rodeo or Segway segments require a good sense of balance. Experts at handling a ball will have a chance to prove their mettle during basketball, table tennis, goal wall shooting or beach volleyball. A DJ will be on hand to ensure the right atmosphere and a real summer feel.

Amazon Picking Challenge

This competition challenges entrants to build original robot hardware and software to attempt the challenging task of picking a large variety of different items from shelves (pick) and putting them back (stow). The challenge takes place over four days:

- **Thursday, June 30: Practice for stow and pick tasks.**
- **Friday, July 1: Stow task finals – move 12 items from a tote into partially full bins on a shelf.**
- **Saturday, July 2: Pick task finals – move 12 specified items from partially full bins on a shelf into a tote.**
- **Sunday, July 3: Open – teams will demonstrate an aspect of their robot.**



Amazon Picking Challenge Schedule

Thursday June 30th – Practice runs

12:30	Applied Robotics
12:45	HARP
13:00	Delft
13:15	NimbRo Picking
13:30	AA-team
13:45	KTH
14:30	microRecycler
14:45	IITK-TCS
15:00	C^2M
15:15	MIT
15:30	PFN
15:45	Dataspeed-Grizzly
16:30	Rutgers ARM
16:45	Duke
17:00	ACRV
17:15	Team K

Friday July 1st – Stow task finals

9:30	C^2M
9:55	MIT
10:20	PFN
10:45	Dataspeed-Grizzly
11:10	Rutgers ARM
11:35	Duke
13:00	ACRV
13:25	Team K
13:50	AA-team
14:15	KTH
14:40	microRecycler
15:05	IITK-TCS
15:45	Applied Robotics
16:10	HARP
16:35	Delft
17:00	NimbRo Picking

Saturday July 2nd – Pick task finals

9:30	AA-team
9:55	KTH
10:20	microRecycler
10:45	IITK-TCS
11:10	Applied Robotics
11:35	HARP
13:00	Delft
13:25	NimbRo Picking
13:50	Rutgers ARM
14:15	Duke
14:40	ACRV
15:05	Team K
15:45	C^2M
16:10	MIT
16:35	PFN
17:00	Dataspeed-Grizzly
17:30	Award Ceremony

Sunday July 3rd – Open robot demonstrations

9:30	Rutgers ARM
9:50	Duke
10:10	ACRV
10:30	Team K
10:50	C^2M
11:10	MIT
11:30	PFN
12:30	Dataspeed-Grizzly
12:50	Applied Robotics
13:10	HARP
13:30	Delft
13:50	NimbRo Picking
14:30	AA-team
14:50	KTH
15:10	microRecycler
15:30	IITK-TCS

PROUD SPONSORS OF
THE AMAZON PICK CHALLENGE

amazonrobotics



For more information
about a great career at
Amazon Robotics, visit:
www.amazonrobotics.com



The contest combines many robotics research areas including object recognition, pose estimation, grasp planning, compliant manipulation, motion planning, task planning, task execution and error recovery. Scores are based on the number and difficulty of items that are transferred successfully in a fixed amount of time. To learn more about the Amazon Picking Challenge, visit <http://amazonpickingchallenge.org>.

STEM Exhibition

When the RoboCup community steps onto the world stage once a year, it becomes clear just how much robotics and artificial intelligence are going to change and shape life in the future. Moreover, the exciting and entertaining nature of the competitions, together with the specialized opportunities for young people, succeed at awakening the enthusiasm of young talent for future technologies and STEM-fields. RoboCup provides the ideal environment for high-tech companies, universities and research institutes to present what they have to offer in a targeted and effective way.

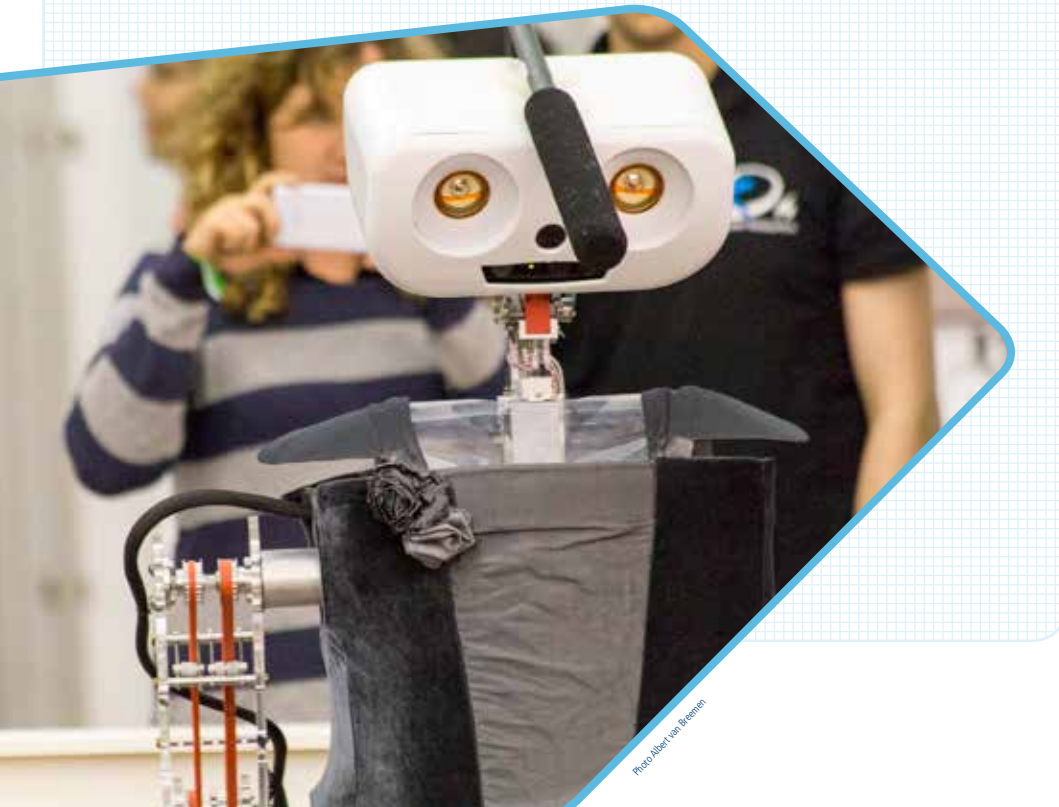


Photo: Robert von Breiten

Exhibitors

Agentur für Arbeit Leipzig	CCL, MZF 3/4, Stand 08
Amazon Robotics, LLC	Hall 4, B04
Anhalt University of Applied Sciences	CCL, MZF 3/4, Stand 14
BMW Group	CCL, MZF 3/4, Stand 04
brainLight GmbH	Hall 2, D10
Bundeswehr	CCL, MZF 3/4, Stand 07
Competence Center Technology-Diversity-Equal Chances	Hall 2, C04
DHL Trade Fairs & Events GmbH	Hall 4, C27
Donaubauer AG	Hall 2, B07
ERL (SPARC/euRobotics)	Hall 4, B19
EU project TRADR	Hall 4, B19
EU project EARS	Hall 4, B19
EU project Monarch	Hall 4, B19
EU project EUroC	Hall 4, B19
EU project CENTAURO	Hall 4, B19
Festo Didactic SE	Hall 4, A08
Flower Robotics Inc.	Hall 2, A06
Fraunhofer-Gesellschaft zur Förderung der angewandten Forschung e.V.	CCL, MZF 3/4, Stand 13
futureSAX	Hall 2, A32
German Aerospace Center (DLR)	Hall 2, C06
HTW Dresden University of Applied Sciences	Hall 2, A32
HTWK Leipzig University of Applied Sciences	Hall 2, C12
IEEE Robotics & Automation Society	Hall 4, A18
Informatik DV GmbH	Hall 2, C02
ISTITUTO ITALIANO DI TECNOLOGIA (IIT)	Hall 4, B22
Jobware Online-Service GmbH	CCL, MZF 3/4, Stand 05
JUNGHEINRICH AG	CCL, MZF 3/4, Stand 03
KeJia Robotics	Hall 4, B20
Kinova Robotics	Hall 4, C25

KUKA Roboter GmbH
 Leipzig Chamber of Commerce and Industry (IHK)
 M Plan GmbH
 marketingmoves
 MathWorks
 maxon motor GmbH
 Merseburg University of Applied Sciences
 noDNA GmbH
 PAL Robotics S.L.
 ROBOTIS Co., Ltd.
 Sächsisches Staatsministerium für
 Wissenschaft und Kunst
 Saxony Economic Development Corporation
 Schenker Technologies GmbH
 Shell Deutschland Oil GmbH
 Siemens AG

 SoftBank Robotics – SAS
 Staatsministerium für Wirtschaft, Arbeit und
 Verkehr Sachsen
 think ING. / GESAMTMETALL Gesamtverband
 der Arbeitgeberverbände der Metall- und
 Elektro-Industrie e.V.
 Technische Universität Bergakademie Freiberg
 - University of Resources
 Technische Universität Dresden
 Technische Universität Chemnitz
 TOYOTA Motor Europe NV/SA
 TURKISH AIRLINES Inc.
 TUXEDO Computers GmbH
 Unimat I Kreativ Wille
 VARIOBOT
 VDI – GaraGe gemeinnützige GmbH
 VECTOR Informatik GmbH

Hall 4, A24
 Hall 4, D35
 CCL, MZF 3/4, Stand 06
 CCL, MZF 3/4, Stand 01
 Hall 2, B06
 Hall 2, B05
 Hall 2, C10
 Hall 2, A19
 Hall 4, B27
 Hall 2, D02
 Hall 2, A32

 Hall 2, A32
 Hall 2, B08
 CCL, MZF 3/4
 Hall 2, A08
 Hall 4, B25
 Hall 2, A15
 Hall 2, A32

 Hall 2, A10

 Hall 2, A32
 Hall 2, A32
 Hall 2, A32
 Hall 4, C23
 Hall 2, D13
 Hall 2, B08
 Hall 2, D07
 Hall 2, D09
 Hall 4, E51
 CCL, MZF 3/4, Stand 09



Photo Albert von Bremen

RECRUITING_{FOR} MOBILITY 4.0

LOOKING FOR A TOP JOB OR CAREER OPPORTUNITY IN MOBILITY 4.0? WE WANT TO TALK TO YOU!

CCL, Leipziger Messe / Leipzig Trade Fair
July 1-2, 2016, 9:00 – 18:00

Join us for "Recruiting for Mobility 4.0" at RoboCup 2016. Organized by **careers in automotive worldwide** in collaboration with the RoboCup 2016 Team and Leipziger Messe, this is the perfect platform to launch an exciting new career.

- **Meet** some of the world's **TOP employers!**
- **Network** with engineers, students and professionals from around the globe!
- Take advantage of career services like **CV Checks** and **Consultations!**
- Enjoy inspiring **discussions, presentations and workshops!**

Photo: Bart van Overbeek

PLUS.... ENJOY THESE CAREER SERVICES

CV CHECK

Applying for a job but not sure if your CV is as up-to-date as it should be? Bring it to the event and let our experts from Jobware finetune it for you!



NETWORKS FOR WOMEN IN ENGINEERING

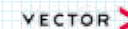
Saturday 2 July 2016 is "Girls' Day" at RoboCup. Meet members of deutscher ingenieurinnenbund e. V. This association is the most important network for female engineers in Germany. Find out what dib can offer you and learn all about the networks and associations for female engineers worldwide.



JOB BOARD

Search top jobs on the Recruiting for Mobility 4.0 Job Board.
We may just have the perfect opportunity for you!

THANKS TO OUR PREMIUM PARTNERS:



For additional information and program download, visit
www.recruitingformobility.com

Co-located Scientific Meetings and Events

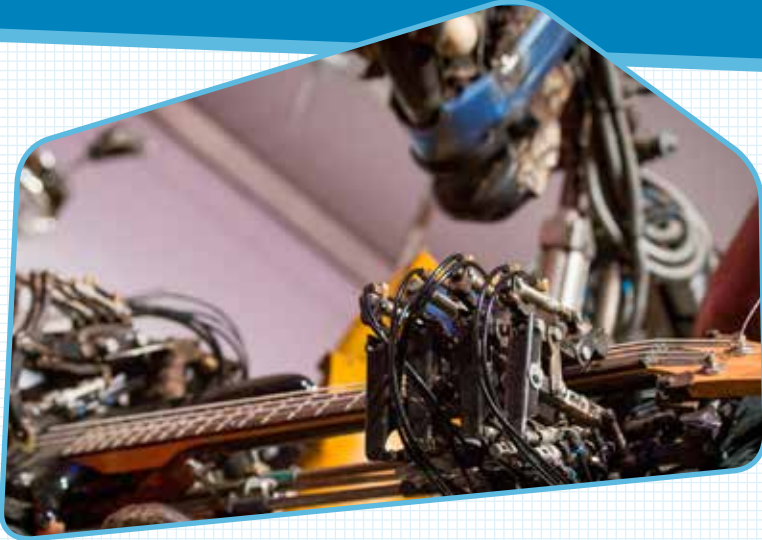


Photo: Albert van Breemen

June 29, 8:30 – 17:30, Jun 30, 8:30 – 17:30, July 1, 9:00 - 15:10, CCL (Hall 4):

IAV 2016 – 9th IFAC Symposium on Intelligent Autonomous Vehicles
International Federation of Automatic Control

June 29, 9:00 – 19:00 and Jun 30, 9:00 – 17:00, CCL (Lecture room 10):

DGR Days | Karlsruher Institut für Technologie (KIT), TU Darmstadt

June 30, 9:30 – 17:00, CCL (Lecture room 11):

2nd Industry Dialog East, On the way to digital industry – Robotics and Automation in practice | The Leipzig Chamber of Commerce and Industry (IHK zu Leipzig)*

June 30, 10:00 – 16:00, CCL (Banquet room 2):

Looking at the world's best robotic footballers "feet" - Workshop for teachers
Sächsisches Bildungsinstitut (SBI)*

June 30, 14:00 – 18:00 and July 1, 8:00 - 13:00 Uhr, CCL (Lecture room 10):

DGR Round Table | Karlsruher Institut für Technologie (KIT), TU Darmstadt

June 30 to July 3, CCL (Lecture room 12):

Expert Forum on the Future of Robot Competitions, jointly organized by RoboCup and EU project RockEU2

July 1, 9:00 – 17:00, CCL (Lecture room 9):

MORSE16 – Third Workshop on Model-Driven Robot Software Engineering | TU Dresden

July 1, 9:00 – 13:00, CCL (Lecture room 11):

Leipzig ♥ Robots, Robotics Initiatives and Competitions in Leipzig
HANDS on TECHNOLOGY*

July 1 and 2, 14:00 – 16:00 (Seminar room 6/7):

AI Robot „Patin“, trends of home robots in Japan and Robotics design
Workshop by Flower Robotics

Co-located scientific events especially for girls and young women

June 30 to July 3, Competition Hall 2, C04:

MI(N)Tmachen mit dem Girls'Day Kompetenzzentrum

July 2, 12:00 – 17:00 (Forum Mobility 4.0 MZF 3/4 CCL):

Women in Mobility 4.0 | Recruiting for Mobility 4.0

Status: 16-5-21 (subject to modifications).

Please notice that for most events advance reservation is required. More information about the co-located scientific program and events can be found at <http://www.robocup2016.org/en/events/scientific-program/>.

*in German language

Social Events



Opening Ceremony

June 29, 18:00

CCL, Hall 1

Junior Party

July 1, 18:00

Outdoor Area only for participants
of RoboCupJunior and RoboCamp

Award Ceremony Junior

July 3, 14:30

Competition Hall 4, OnStage Stage

Award Ceremony Major

July 3, 17:00 - 19:00

CCL, Hall 1

Major Banquet and Party

July 3, 19:00

Glass Hall
only for participants of RoboCup Major,
organizers and invited guests

Farewell

July 4, 18:00

CCL, Alta Vista
only for participants of the RoboCup Symposium

Venue

Tradition meets state-of-the-art: The Leipzig exhibition grounds

Leipzig and trade fairs are two sides of the same coin. The city has hosted trade fairs and events for 850 years – a symbiosis that has given way to a unique cityscape. The current exhibition grounds were opened in 1996, and are considered among the most modern in Europe: five trade fair halls, 111,300 square meters of covered exhibition space, 70,000 square meters of open grounds and the Congress Center Leipzig (CCL) form the backbone of a powerful infrastructure. Its architectural highlight is the imposing 238 meter long Glashalle (Glass Hall), which was built in conjunction with British star architect Ian Ritchie.

Event Location:

Leipziger Messe GmbH

Messe-Allee 1

04356 Leipzig, Germany

www.leipziger-messe.de

www.robocup2016.org



The RoboCup Venue

RoboCup will be held in trade fair Halls 2 and 4, in the Congress Center Leipzig (CCL) and on the open grounds. The buildings are accessed through the CCL. Halls 2 and 4 are the venues for the competitions in the Major and Junior segments. The open grounds behind Hall 4 will also be used for the outdoor competitions of Rescue Robot League, while the outdoor competitions for the Middle Size and Standard Platform Leagues will take place in the Glass Hall (no public access). The special exhibition Recruiting for Mobility 4.0, the Recruitment Days and the co-located scientific program will take place in the CCL. Interactive events await participants and visitors on the open grounds.

Opening Hours for Participants

June 28	8:00 – 23:00:	Setup for Major
June 29	8:00 – 23:00:	Setup for Major and Junior
	18:00:	Opening
June 30	7:00 – 23:00:	Preparations and competitions
July 1	7:00 – 23:00:	Preparations and competitions
	18:00:	Junior Party
July 2	7:00 – 23:00:	Preparations and competitions
July 3	7:00 – 16:00:	Preparations and finals
	14:30:	Award Ceremony Junior
	17:00:	Award Ceremony Major
		afterwards Major Banquet and Party
July 4	8:50 – 18:00:	Symposium
	18:00:	Farewell Party

The current schedule will be available and regularly updated on the on-site displays and on the event web page robocup2016.org.

The competition grounds can only be accessed with an official participant badge. A team shirt, business card etc. will not be sufficient to gain access. All participants are registered on-site, and participant badges/documents are issued in the CCL.

Opening Hours for Public

June 30 to July 2	9:00 – 18:00:	Competitions
July 3	9:00 – 16:00:	Semi-Finals and Finals

Site Plan



Important Information for Participants



Food: Participants and visitors can partake of a variety of international dishes, snacks and beverages at various stations in the Food Court in Competition Hall 2, in the bistros in Competition Hall 4 as well as between the Competition Halls, and also in the Outdoor Area from June 28 to July 2, from 9:00 to 22:00, and from 9:00 to 16:00 on July 3, 2016.



Internet: Wi-Fi connections will not be provided in Competition Halls 2 and 4 to ensure that the competitions are not disrupted. Mobile hotspots and Wi-Fi features on mobile devices (e.g. Smartphones and tablets) should be turned off where possible so as not to interfere with the competitions. Wi-Fi hotspots with the designated log-in information will be available in the CCL and in the Outdoor Area. You can contact our IT Support team at the designated counters in Competition Halls 2 and 4 during your access periods.



Lost & Found: Lost & Found will be set up during opening hours for visitors at the information counter in the CCL, Level 0. Please contact on-site staff if you have lost or found something.



Meeting Rooms: A limited number of team meeting rooms is available in the venue. There are two meeting rooms in Competition Hall 2 and three meeting rooms in Competition Hall 4. Please sign your meetings (date and time) in the lists hanging in front of the meeting rooms. The keys for the meeting rooms are deposited at the LOC stand in Competition Hall 2.



Prayer Room: There is a prayer room provided in multi-purpose area #2 in the CCL. Please look for the signs called "Prayer Room".



Smoking: Smoking is only permitted in the designated areas outside of the Competition Halls and the CCL.

Where can I find...



Shopping and mail services: Numerous shopping options are available in the nearby Sachsenpark, including two supermarkets, a post office, a pharmacy, building supply store, shoe store and a clothing store. The Sachsenpark can be reached in 5 minutes by foot.



Gas stations: Three gas stations are located in the immediate vicinity: Globus consumer market Leipzig-Seehausen (An der Passage 1), Aral gas station (Maximilianallee 70) and Agip (Söllichauer Straße 2).



ATM: The nearest ATM is located in the Glass Hall on the exhibition grounds (Sparkasse Leipzig). The Glass Hall is not accessible to visitors, please note the information posted at the entrances to the Glass Hall. Additional ATMs are located in the Sachsenpark across the street (5 minutes by foot).

Don't forget!

Badges: Please make sure that you are always wearing your participant badge! It entitles you to free local public transport from the hotel to the trade fair grounds in selected tariff zones. Volunteers will also be available at a number of key locations (e.g. exhibition grounds or central train station) to help you find your way.

Certificate of Participation: You can get your certificate of participation at the serving station for shirts from 10:00 to 17:30 in the CCL, level 0.

Fan Shop: There will be designated fan shops in Competition Hall 2 and 4 offering some nice merchandising products during competition time – get your own RoboCup 2016 cup to-go, beach towel or frisbee and take it home as a souvenir!

Food Vouchers: You can purchase food vouchers valued at EUR 6.50 on June 28, 29 and 30, 2016, from 10:00 to 17:30 in the CCL, level 0. They can be redeemed for snacks or lunch and a beverage (0.5 l) at the designated catering stations in the Competition Halls and Outdoor Area.

Free Water: Your badge includes vouchers for a free bottle of water for each competition day (sponsored by KUKA), which you can pick up from the designated station in Competition Hall 4.

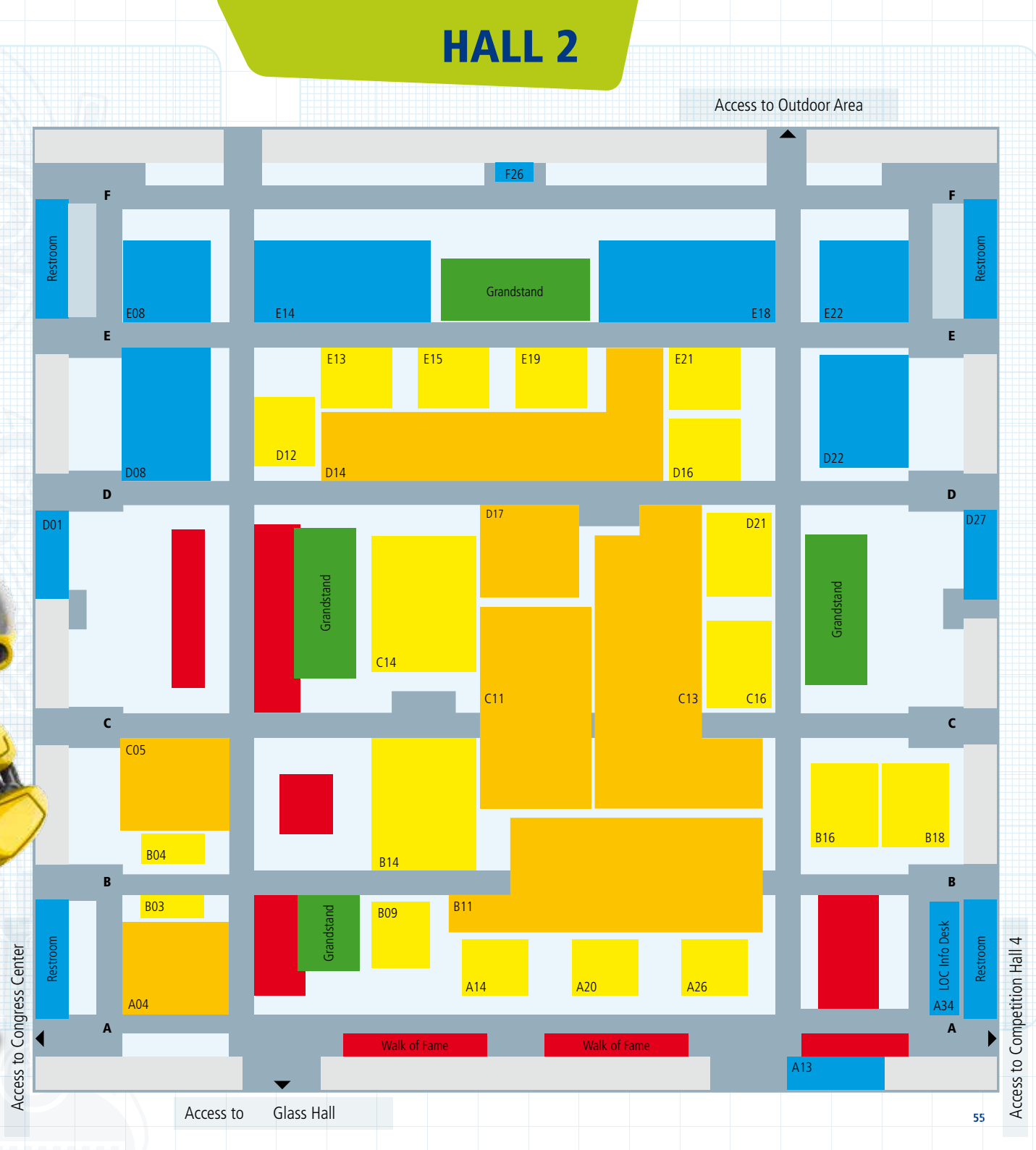
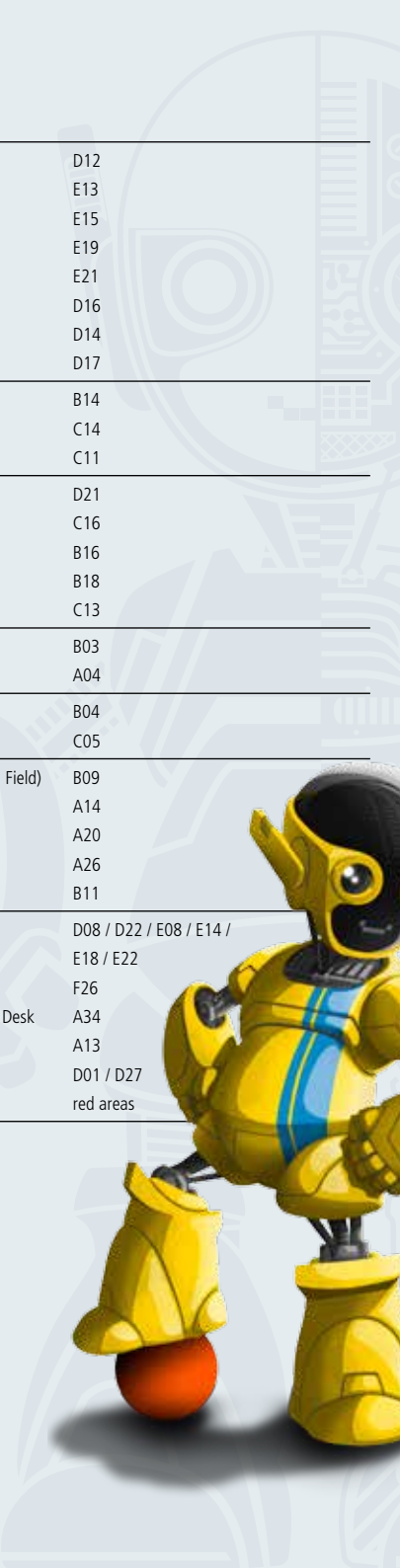
Social Events: A variety of social events will be held during the event; see page 46 for an overview.

T-shirts: Your badge contains a voucher for a RoboCup 2016 T-shirt. You can pick up your T-shirt on June 28, 29 and 30, 2016, from 10:00 to 17:30 in the CCL, Level 0.

Trips & Excursions: During the set-up days, you can contact travel agent Geißler Reisen to book recreational activities and excursions (ranging from Leipzig City Tours to small city excursions) for yourself and accompanying guests. The booking counter is located in the CCL, Level -1, and is open from 10:00 to 17:30.

HALL 2

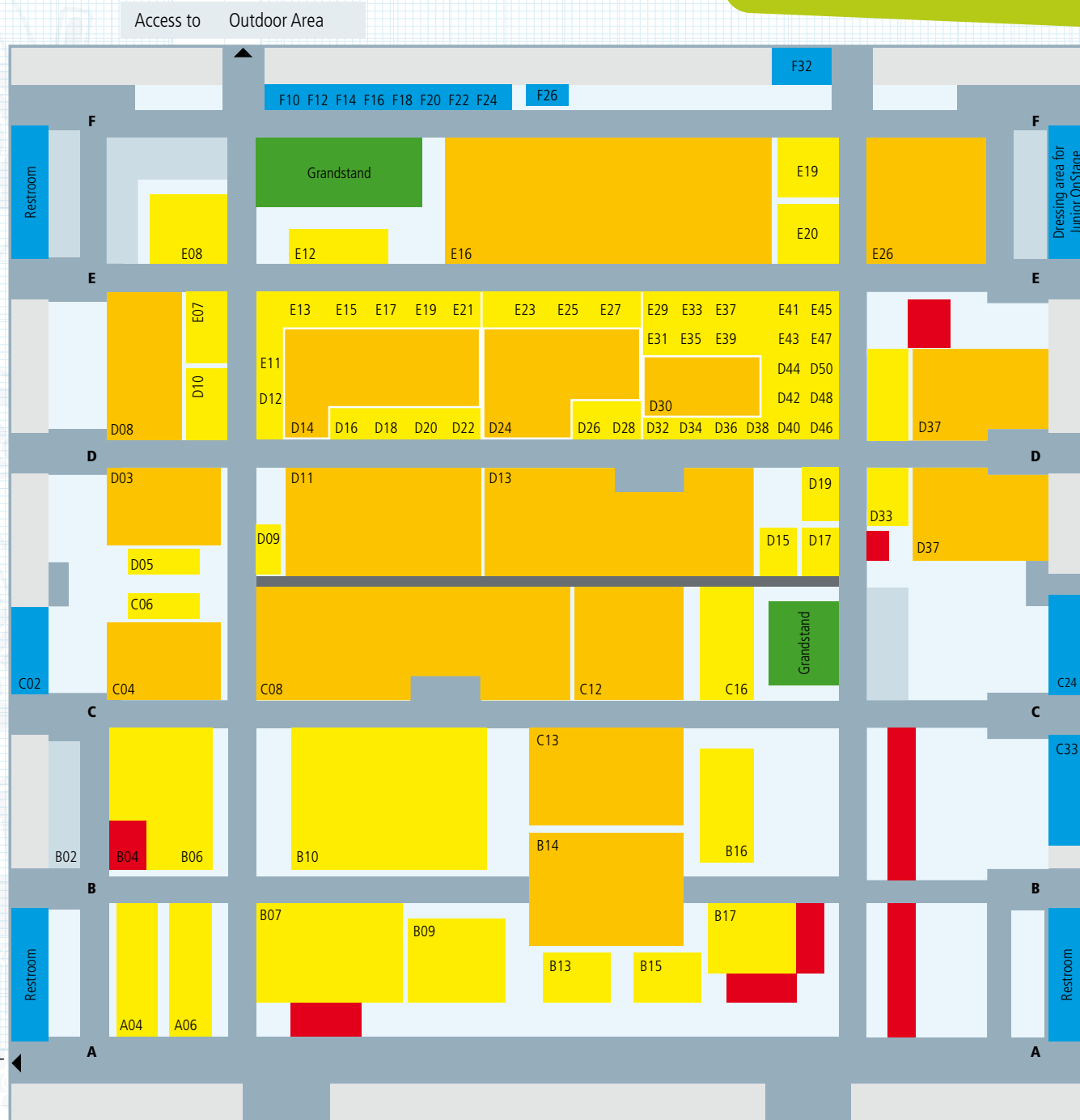
Humanoid League Field #1	D12
Humanoid League Field #2	E13
Humanoid League Field #3 (Main Field)	E15
Humanoid League Field #4 (Main Field)	E19
Humanoid League Field #5	E21
Humanoid League Field #6	D16
Humanoid League Team Area #1	D14
Humanoid League Team Area #2	D17
Middle Size League Field #1	B14
Middle Size League Field #2 (Main Field)	C14
Middle Size League Team Area	C11
Small Size League Field #1 (Main Field)	D21
Small Size League Field #2 (Main Field)	C16
Small Size League Field #3 (Double Field)	B16
Small Size League Field #4 (Double Field)	B18
Small Size League Team Area	C13
Soccer Simulation League 2D Arena	B03
Soccer Simulation League 2D Team Area	A04
Soccer Simulation League 3D Arena	B04
Soccer Simulation League 3D Team Area	C05
Standard Platform League Field #1 (Main Field)	B09
Standard Platform League Field #2	A14
Standard Platform League Field #3	A20
Standard Platform League Field #4	A26
Standard Platform League Team Area	B11
Food Court	D08 / D22 / E08 / E14 / E18 / E22
IT Support Information Desk	F26
Local Organizing Committee Information Desk	A34
Nao Clinic	A13
Team Meeting Room	D01 / D27
Exhibition / Sponsors	red areas



Legend

Amazon Robotics	B04
Amazon Picking Challenge	A04 / A06 / B06
Rescue Simulation League Virtual Robot Arena	C06
Rescue Simulation League Virtual Robot Team Area	C04
Rescue Simulation League Agent Arena	D05
Rescue Simulation League Agent Team Area	D03
Rescue Robot League Arena	B10
Rescue Robot League Team Area	C08
RoboCup Logistics League Arena	B09
RoboCup Logistics League Team Area	B07
RoboCup@Work League Arena #1	B13
RoboCup@Work League Arena #2	B15
RoboCup@Work League Team Area	B14
RoboCup@Home League Arena #1	B16
RoboCup@Home League Arena #2 (Main Arena)	C16
RoboCup@Home League Team Area #1	C13
RoboCup@Home League Team Area #2	C12
@Home-SP Demo Preparation Area	B17
Junior Soccer League Field	D32 / D34 / D36 / D38 / D40 / D42 / D44 / D46 / D48 / D52 / E29 / E31 / E33 / E35 / E37 / E39 / E41 / E43 / E45 / E47
Junior Soccer League Super Size Field	D15 / D17 / D19 /
Junior Soccer League Team Area #1	D13
Junior Soccer League Team Area #2	D30
Junior Rescue League Maze Field	D26 / D28 / E21 / E23 / E25 / E27
Junior Rescue League Maze Team Area	D24
Junior Rescue League Line Field	D12 / D16 / D18 / D20 / D22 / E11 / E13 / E15 / E17 / E19
Junior Rescue League Line Team Area #2	D14
Junior Rescue League Line Team Area #1	D11
Junior Rescue League Line Mini Field	D09
Junior Rescue League CoSpace Field	D10 / E07
Junior Rescue League CoSpace Team Area	D08
Junior OnStage League Stage	E12
Junior OnStage League Team Area	E16
Junior OnStage League Test Field	E20 / F19
RoboCamp Team Area	D37
RoboCamp Competition Area	D33
Interview Room	F10 / F12 / F14 / F16 / F18 / F20 / F22 / F24 / F32
IT Support Information Desk	F26
Junior Organisation Desk	E08
Junior Attendant Area	E26
Team Meeting Room	C02 / C24 / C33
Exhibition / Sponsors	red areas

Access to Competition Hall 2



Travel to and from Leipzig Trade Fair



Airport: The airport is located close to the exhibition grounds. It can be reached in just twelve minutes on the Autobahn by car or taxi (A14 towards Dresden). In addition, the S5 train also runs between the airport and the Leipzig exhibition grounds every half hour.

Car: The exhibition grounds are located in the middle of a dense Autobahn network. From the A14, take the exit Leipziger Messegelände to get directly to the exhibition grounds. The A14 can be reached with the A9 (via the Schkeuditzer interchange) and the A38 (via the Parthenaue interchange). The national highway Bundesstrasse 2 will take you from the exhibition grounds to downtown Leipzig in just fifteen minutes.

Train: Many regional and long-distance trains stop at Leipzig's central train station. From here, you can take the rapid transit railway (S-Bahn) (S1, S2, S5 or S5X) or the tram (Route 16) to the exhibition grounds (Leipziger Messe / Messegelände).

Tram/rapid transit railway: The Leipzig exhibition grounds and the down-town area are connected to the rapid transit railway and tram. Rapid transit railway: Routes S1, S2, S5 or S5X of the Mitteldeutschland rapid transit railway take only six minutes to travel between the central train station and exhibition grounds; trains run at 15 minute intervals (on average). Tram route 16 leaves the exhibition grounds every 10 minutes. It takes 18 minutes to reach the central train station.

Schedule information: www.lvb.de or www.bahn.de. The participant badge entitles the wearer to free travel on local public transport in selected tariff zones. Therefore make sure that you always wear your badge.

Taxi: Taxi stands are available right at the CCL. Taxis can also be found at all central locations in the down-town area. All taxi trips are billed on the basis of a taxi meter, which is placed in a visible location inside the driver's cab. Selected taxi companies: Funktaxi (+49-3414884), Löwentaxi (+49-341982222), DTS Taxi Service (+49-3414233), Top Taxi (+49-3413338333) and FTL Funktaxi Leipzig (+49-341600500).

AIRPORT -> Leipzig Trade Fair: 15 min, from 23 €

AIRPORT -> CITY CENTER OF LEIPZIG: 25 min, from 33 €

Leipzig Trade Fair -> CITY CENTER OF LEIPZIG: 15 – 20 min, from 20 €

Volunteers: Volunteers who can provide information for assistance can be found at the Leipzig airport and the central train station from June 26 to 29, 2016 (look for the RoboCup 2016 T-shirt and balloons) at the Welcome Desks, and also at key locations in Leipzig; they can help you to find your way around Leipzig.

Region

Germany

"Made in Germany" – around the world, Germany stands for quality, reliability and innovation. Highly qualified, skilled workers and engineers and excellence in industrial research and development are the basis of this success. Germany is one of the leading export nations in the world. The economic and innovative strengths are carried by medium-sized businesses and global players such as Festo or Siemens. Germany is also the land of great poets and thinkers, such as Johann Wolfgang von Goethe, Friedrich von Schiller, Immanuel Kant, Ludwig Wittgenstein, and Karl Popper, but also of inventors and explorers like Karl Benz, Gottlieb Daimler, Robert Bosch, Gottfried Wilhelm Leibniz and Alexander von Humboldt. All over the world, Germany enjoys an excellent reputation for the successful organization and realization of large events, such as the FIFA World Cup 2006 or WorldSkills 2013 in Leipzig. The German society is open and tolerant, friendly and well-organized. Finally, Germany offers a high level of public security, an important basis for a smooth RoboCup World Championship 2016.



Saxony

The Free State of Saxony is located in the border triangle region of Germany, Poland and the Czech Republic. It is also part of the Neisse-Nisa-Nysa Euroregion that was founded in 1991 to foster cross-border cooperation. With a population of 4 million people, Saxony has a long industrial and business tradition. Today, it is one of Germany's most dynamic federal states, home to high-tech and automotive industries, and mechanical engineering. In recent years, the state has attracted numerous companies due to the availability of highly-qualified specialists, a modern infrastructure and an efficient state administration. More than 6,000 companies, including BMW, Amazon and DHL have established a presence in Saxony since 1990, as have numerous investors, specialists and intellectuals. To ensure a prosperous future, Saxony fosters the development of dynamic regional clusters, which combine the efforts of producers, suppliers, service industries, research, education and other institutions.



Leipzig

Leipzig is a vibrant metropolis in the heart of Europe with a 1,000-year history in trade and exhibitions. It is also an important transportation hub with one of Europe's most modern exhibition centers. In 1989, Leipzig was at the center of a peaceful revolution that led to German reunification. Rich in history and culture, Leipzig was once home to great artists including Bach, Wagner and Goethe. The economy is characterized by the automotive industry, environmental and medical technology and logistics with heavyweights such as Porsche, BMW and Amazon. The city also boasts a well-known research and education sector, including the Max Planck and Fraunhofer Institutes. Leipzig University, founded in 1409, is Germany's second-oldest university (Angela Merkel is an alumna). Today, Leipzig is experiencing a culture and arts boom, and Germany's most livable city is listed among the Top 3 European cities with the highest quality of life.

Video: <https://www.youtube.com/watch?v=-exQz1f151U>



Facts and figures

Population of Leipzig: 544,479

Population of Saxony: 4.07 million

Language: German is the official language. Younger people in particular will also be able to assist you in English. What you can count on: The people of Saxony are very welcoming and open.

Currency: Euro (1 Euro = 1.12 USD, as of June 3, 2016). Most restaurants and businesses accept payment by EC Card. Payment by credit card should be clarified in advance.

Weather: Leipzig is located in the temperate climate zone (51.19° North, 12.20° East), with a mean annual temperature of around 10 °C (50F). The air temperature in June and July is pleasant with average air temperatures between 11 and 24 °C (52 and 75 °F). The weather in this time of the year is usually warm and sunny with occasional rain showers or short summer thunderstorms. No extreme weather conditions are likely.

Electricity: 230 V, 50 Hz

Telephone: Country code for Germany: +49; area code for Leipzig: (0)341

Water: Tap water is safe to drink.

Leipzig Tourist Service: Katharinenstraße 8, Tel.: 0341 7104260

Good to know:

There is this funny symbol „ß“ in German language, which stands for double s.





Exploring Leipzig and its Districts



Apps:

Leipzig Travel App

Whether you're planning your trip from home or looking for practical information after you've arrived – the Leipzig Travel App has it all: events calendar, information on city tour providers, shopping addresses, Leipzig's bar districts and much more. GPS-linked maps showing you all the nearby attractions make it easy for you to decide what to do next. The city app for Leipzig is available for download for all Android and Apple users.

Leipzig's Hidden Gems

The Hidden Gems of Leipzig app shows places that cannot always be found in travel guides. A journey into the city's spirit. Available for Android and iOS.



Besides the city centre Leipzig offers different architectural, cultural and gastronomic highlights. So no matter in which district you will stay, there is so much to discover.

Downtown Area

Downtown Area: Sightseeing, Shopping, Dining

Leipzig's downtown area has experienced a renaissance in recent years: Take a trip into Leipzig's history among the impressive historic buildings of the Old City Hall, the churches Thomaskirche and Nikolaikirche, or the Mädler-Passage. If you are looking for a break, feel free to relax in one of the cafés in the Barfußgässchen or Gottschedstraße, for example, or shop to your heart's content in any of the numerous stores.

Leipzig loves Coffee. And Coffee loves Leipzig.

In the beginning of the 18th century Johann Sebastian Bach composed his famous "Coffee Cantata" in Leipzig. The composer's passion for the sweet brown brew had been kindled by two decades of regular visits to the Zimmermann Coffee House in Leipzig – one of the first cafés in Europe. Furthermore there is another very important coffee house, which ranks among the oldest and continuously run in Europe – „Zum Arabischen Coffe-Baum“. Since 1720 poets, composers and academics have been regular guests. Today every of the numerous and cosy rooms on four floors has its own story, which gives visitors an impression of the lives and hustle of the "Coffe-Baum society".

The Leipzig Gewandhaus and its Orchestra

Leipzig's international reputation as a city of music is closely connected to the work of the Gewandhausorchester. This world-class orchestra is based in the Neue Gewandhaus concert hall on Augustusplatz, and is rooted in the tradition of the Grosse Concert (Grand Concert) which was established in 1743. It is the oldest civic concert orchestra in Germany. The orchestra tours in Germany and abroad every year. Led by the internationally renowned conductor Riccardo Chailly, the orchestra also performs together with the St. Thomas Boys' Choir in St. Thomas Church, as well as for productions at the Leipzig Opera. The Gewandhaus concert hall is the home of the famous Gewandhausorchester and is a leading international concert venue.

Traditional food with history: Auerbachs Keller

Auerbachs Keller was founded in 1525 as a wine tavern and is without doubt the most famous restaurant in Leipzig. Practically every famous visitor was a guest here. The list goes from Martin Luther, Queen Elizabeth II via Tsar Peter the Great up to Nikita Khrushchev, not to forget German national poet J. W. Goethe. The tavern became famous in connection with the legends of Dr. Faustus and Mephistopheles, which were immortalized then by Goethe's drama „Faust“, one of the greatest works of German literature.



Variety extraordinaire: Kristallpalast Variété

Leipzig's most famous and innovative variety show, the Kristallpalast Variété, has been alive and well in the heart of the city for the past 10 years, radiating elegance and contemporary grandeur. It dazzles with variety shows of a fresh, unconventional and poetic nature, which hold visitors of all ages from 6 to 99 under their spell. In its intimate atmosphere, the auditorium at the Variété seats 190 people in the stalls and two balconies. There, you can witness a firework display of mesmerising acrobatics incorporated in a show brimming with music, charm, magic and wit. You'll be amazed at the aerial acrobatic display taking place seven metres above you. Treat yourself to some first-class fare in the elegant Variété restaurant, which is open both before and after the show, and where the constantly changing menus are inspired by the imaginative ideas of international artists and their acts.

Tracing the Peaceful Revolution

Autumn 89: the images of the prayers for peace in St. Nicholas Church and the Monday demonstrations on the inner city ring road were flashed around the world. The decisive day for the Peaceful Revolution was 9th October 1989 in Leipzig, when 70,000 demonstrators toppled the SED regime with cries of „We are the people!“ and „No violence!“ This was a moment when a piece of national history was written in Leipzig, opening the way to a reunited Germany. On the night of 9th-10th November 1989, the Berlin Wall fell.

3 Tips for Shopping

Hinrichsinndreissig, Courtyard of Fregehaus, Katharinenstraße 11, 04109 Leipzig

Maat, Burgstraße 9, 04109 Leipzig

Smow, Burgplatz 2, 04109 Leipzig

3 Tips for Feasting

Vodkaria, Gottschedsraße 15, 04109 Leipzig,

Coffeebaum, Kleine Fleischergasse 4, 04109 Leipzig

[Tip! Look at page 65]

Auerbachs Keller, Mädler Passage, Grimmaische Strasse 2-4, 04109 Leipzig

[Tip! Look at page 66]

Exploring Leipzig and its Districts

Plagwitz: A hotspot for the creative and fine arts

From boring to colorful: This former industrial quarter has re-invented itself to become Leipzig's new home for the young arts scene. The formerly empty factory halls have been turned into sophisticated lofts, galleries and clubs. The 100,000 square meter grounds of the Baumwollspinnerei are the symbol of Leipzig's creative scene. And not least, Plagwitz also owes its popularity to the many water channels that run through the district. Take a boat and see Leipzig from a unique vantage point.



Plagwitz

3 Tips for Shopping

Hafen Leipzig, Merseburger Straße 38, 04229 Leipzig

Haiglück, Alte Strasse 5, 04229 Leipzig

Wildwechsel, Karl-Heine-Straße 69, 04229 Leipzig

3 Tips for Feasting

Kaiserbad, Karl-Heine-Straße 93, 04229 Leipzig

Kartoffelfräulein, Karl-Heine-Straße 68, 04229 Leipzig

Casablanca, Karl-Heine-Straße 47, 04229 Leipzig

Schleußig

Schleußig: The idyllic island

Schleußig is surrounded by water. The city district can only be reached by bridges, and offers an island with an idyllic setting near the downtown area. It is home to students, families, artists and bankers – all living in harmony. Schleußig is a popular residential area that offers extensive green space, small cafés and proximity to water.



3 Tips for Shopping

Röstgut, Holbeinstraße 29, 04229 Leipzig

Tokyo Joe, Industriestraße 22, 04229 Leipzig

Lydiatrudi, Industriestraße 31, 04229 Leipzig

3 Tips for Feasting

Sancho Pancha, Industriestraße 2, 04229 Leipzig

Tonis handmade icecream, Könnertstraße 21, 04229 Leipzig

Peach Pit, Könnertstraße 14, 04229 Leipzig

Lindenau

Lindenau: A new awakening

This former industrial quarter is just now starting to awake from a long slumber, as cheap rents are attracting many students and artists to this urban and sometimes rough district near the city center. The district is characterized by eccentric pubs, small cafés and a large number of snack bars, which are gradually transforming the area into a popular destination.



Exploring Leipzig and its Districts

Lindenau

3 Tips for Shopping

Meisen auf Reisen, Gemeindeamtsstraße 1, 04177 Leipzig

Rad3, Erich-Köhn-Straße 63b, 04177 Leipzig

Hilde tanzt, Georg-Schwarz-Straße 20, 04177 Leipzig

3 Tips for Feasting

Olea, Dreilindenstr.1, 04177 Leipzig

Rudi Bar, Merseburger Str. 48, 04177 Leipzig

Kaffee Schwarz, Georg-Schwarz-Straße 56, 04177 Leipzig

Südvorstadt: Pure life

This is where everything happens: The Karl-Liebknecht-Straße, which the people of Leipzig have nicknamed Karli, runs through the popular Südvorstadt district. It is the meeting place for students, artists and families who want to be where the action is. Cafés, taverns, restaurants, and small shops: Südvorstadt is definitely worth a visit – any time of the day.

Südvorstadt

3 Tips for Shopping

Vielfach, Karl-Liebknecht-Straße 66, 04275 Leipzig

Pussy Galore, Karl-Liebknecht-Straße 52, 04275 Leipzig

herMAN, Karl-Liebknecht-Straße 52, 04275 Leipzig

3 Tips for Feasting

Noels Ballroom, Kurt-Eisner-Straße 43, 04275 Leipzig

Café Puschkin, Karl-Liebknecht-Straße 74, 04275 Leipzig

Lulu Lottenstein, Karl-Liebknecht-Straße 63, 04275 Leipzig



Connewitz: The alternative side of Leipzig

The Connewitzer junction is the center of this 'alternative' district. Thanks to lower rents, this is the place where artists, musicians and students hang out. They are all a part of a lively alternatively cultural scene. It is also the right place if you are looking for alternative dining options – numerous cafés, including vegan places, are definitely worth a visit.

Connewitz



3 Tips for Shopping

Blaupause, Bornaische Str. 3c, 04277 Leipzig

Shedo@Design, Bornaische Str. 33, 04277 Leipzig

Wonnecitz, Karl-Liebknecht-Straße 165, 04277 Leipzig

3 Tips for Feasting

Cafe Südbräuse, Karl-Liebknecht-Straße 154, 04277 Leipzig

Zest, Bornaische Straße 54, 04277 Leipzig

Frau Krause, Simildestraße 8, 04277 Leipzig

Gohlis: Relaxed family environment

Gohlis has long been considered a nice place to live. With its beautiful old apartments and nearby parks, Gohlis is especially popular among families with children. The Gohliser Schlösschen and Leipziger Zoo invite you to take extended strolls through the grounds.

Gohlis



Exploring Leipzig and its Districts

Gohlis

3 Tips for Shopping

Käsehaus, Breitenfelder Straße 39, 04155 Leipzig

Salumeria Italiana, Stockstraße 2, 04155 Leipzig

Naturdrogerie Sturm, Gohliser Straße 35/37, 04155 Leipzig

3 Tips for Feasting

Münsters, Platnerstraße 13, 04155 Leipzig

Ma Petite Brasserie, Menckestraße 48- 50, 04155 Leipzig

Gosenschenke, Menckestraße 5, 04155 Leipzig

Reudnitz: Multicultural city life

The East is not exactly love at first sight: less green space, lots of needed renovations and busy streets. But those willing to look behind the scenes are rewarded with an experience of the colorful, multicultural and urban side of Leipzig. This city district near the center promises culinary delights at a reasonable price, and a young and growing arts scene.



Reudnitz

3 Tips for Shopping

Tschau Tschüssi, Härtelstraße 4, 04107 Leipzig

Trend Einrichtungen Herrmann, Dresdner Straße 54, 04317 Leipzig

Chizenga, Breite Str. 22, 04317 Leipzig

3 Tips for Feasting

Poniatowski, Kreuzstraße 15, 04103 Leipzig

Substanz, Täubchenweg 67, 04317 Leipzig

4 rooms, Täubchenweg 26, 04317 Leipzig

Leisure time in Leipzig (Selection)

SPORTS

Public swimming pools

Ökobad Lindenthal, Am Freibad 3, 04158 Leipzig

Schreberbad, Schreberstraße 15, 04109 Leipzig

Bike rental

Fahrradstation Zweirad Eckhardt, Kurt-Schumacher-Straße 4, 04103 Leipzig

Next Bike GmbH, Bikes are available at different locations in Leipzig.

Check the website for further information: www.nextbike.de/en/leipzig

Rafting

Kanupark Markkleeberg, Wildwasserkehre 1, 04416 Markkleeberg

Canoeing

Stadthafen Leipzig, Schreberstraße 20, 04109 Leipzig

Bootsverleih am Rennbahnsteig, Rennbahnweg 2A, 04107 Leipzig

Bootsverleih Herold, Antonienstraße 2, 04229 Leipzig

MUSEUMS

Music

Bach-Museum Leipzig, Thomaskirchhof 15/16, 04109 Leipzig

Museum of Musical Instruments, Johannisplatz 5 -11, 04103 Leipzig

Mendelssohn House Museum, Goldschmidtstraße 12, 04103 Leipzig

Schumann-House in Leipzig, Inselstraße 18, 04103 Leipzig



Art

Galerie für zeitgenössische Kunst, Karl-Tauchnitz-Straße 9-11, 04107 Leipzig

Grassi Museum für Angewandte Kunst, Johannisplatz 5-11, 04103 Leipzig

Museum of Fine Arts Leipzig, Katharinenstraße 10, 04109 Leipzig

ASISI Panometer (Great Barrier Reef), Richard-Lehmann-Straße 114, 04275 Leipzig

History

Ägyptisches Museum, Goethestraße 2, 04109 Leipzig

Antikenmuseum der Universität Leipzig, Nikolaikirchhof 2, 04109 Leipzig

Memorial Museum in the „Runde Ecke“, Dittrichring 24, 04109 Leipzig

Grassi Museum für Völkerkunde, Johannisplatz 5-11, 04103 Leipzig

Stadtgeschichtliches Museum Leipzig, Böttchergäßchen 3, 04109 Leipzig

Monument to the Battle of the Nations, Straße des 18. Oktober 100, 04299 Leipzig

Zeitgeschichtliches Forum, Grimmaische Straße 6, 04109 Leipzig

ZOO LEIPZIG

Pfaffendorfer Str. 29, 04105 Leipzig

www.zoo-leipzig.de/en/homepage

CINEMA & THEATRE

Kinobar Prager Frühling, Bernhard-Göring-Straße 152, 04277 Leipzig,

www.kinobar-leipzig.de

Oper Leipzig, Augustusplatz 12, 04109 Leipzig, www.oper-leipzig.de/en/

Gewandhaus zu Leipzig, Augustusplatz 8, 04109 Leipzig, www.gewandhausorchester.de/en

Krystallpalast Varieté Leipzig, Magazingasse 4, 04109 Leipzig

LAKES

Cospudener See (South)

Nordstrand, 04416 Markkleeberg

Perfect for: cyclists, inline skaters and walkers

Watersports: SUP, sailing, paddling, electric boats, kiting

Schladitzer See (North)

Haynaer Straße 1, 04519 Rackwitz

Perfect for: cyclists, inline skaters and walkers

Watersports: SUP, sailing, paddling, electric boats, kiting, water playground

Kulkwitzer See (West)

Seestraße 1, 04207 Leipzig

Perfect for: walkers

Watersports: SUP, diving, paddling, wakeboarding



Saxony and its surrounding area are characterized by a strong economy, scientific excellence, and an interesting history. The landscapes in the surroundings of Leipzig, like the Elbe Sandstone Mountains, the Elbe and Saale rivers, the Harz Mountains, the Thuringian Forest, and numerous new lakes are attractions for those seeking recreation and relaxation.



Trips around Leipzig

Dresden: Characterized by Baroque and Mediterranean architecture amid a beautiful landscape, Dresden is a city of art and culture. Attractions include the world-famous Frauenkirche, the Dresdner Zwinger and its art collections, as well as the Semperoper. With nine universities and numerous research institutes, Dresden has a strong reputation as a center of research and as Germany's Silicon Valley.

Chemnitz: Chemnitz is a traditional center for machinery and plant engineering, as well as the automotive industry.

Dessau: The Bauhaus influenced culture, architecture, design, and art in the 20th century.

Halle: Seat of the National Academy of Sciences Leopoldina, the Martin Luther University of Halle-Wittenberg, as well as numerous research institutes. Halle was the birthplace of Georg Friedrich Händel.

Jena: Jena is the renowned center of the German optical and precision industry with Carl Zeiss as the most notable company.

Wittenberg: The protestant reformation started here in 1517 with the posting of the theses by Martin Luther.

Tip! Our partner Geißler Reisen offers tours to selected sights and cities. You can book tours online @ robocup2016.org or on-site at the designated counters in the CCL!

The typical Saxon

The world tends to caricature the typical German as punctual, bureaucratic and inflexible – while wearing Lederhosen and holding a beer in his hand. But each region in Germany has its own charm and unique features.

So what are some typical Saxon traits?

The people from Saxony are known as a very relaxed and friendly people. For example, if you ask a Saxon for directions, it is quite possible that he will not just provide directions but will also tell you about the buildings and their historic significance. And as a good-bye, you can expect to hear the phrase “gutt, ich mache looos. Tschüssi”.

Saxons are also well known for their love of coffee. It was the “Kaffeesachse” who coined the term “Bliemchenkaffee” (flower coffee). During the time of the Prohibition, coffee was brewed so thin that you could see the flower that was painted on the bottom of the cup. By the way, the cup was made of Meißner porcelain, which has a 300-year tradition and is well-known around the world.

The regional cuisine is also known for several food delicacies. Hearty dishes such as the Sächsischer Sauerbraten and the typical potato soup make regular appearances on local dining tables. Well-known desserts include the Dresdner Eierschecke and the Pfeffi, a green peppermint after-dinner liqueur. Must-eats during the Christmas season include the Dresdner Christstollen and the Pulsnitzer Pfefferkuchen.

Sächsische Quarkkeulchen

Home-made Sächsische Quarkkeulchen

(sweet curd cheese fritters)

Ingredients: 500g boiled potatoes (in the skin),
500g low-fat curd cheese, 150g flour, 40g sugar,
70g raisins conserved in rum, pulp of ½ vanilla pod,
1 egg yolk, zest of ½ lemon, oil for frying
Icing sugar for dusting

How to make Sächsische Quarkkeulchen:

1. Boil potatoes, peel and press through potato ricer. Combine with remaining ingredients into a dough.
2. Form small pancakes and fry in hot oil until golden on both sides. Before serving, dust with some of the icing sugar.



The RoboCup Federation

The Board of Trustees is the ultimate decision-making body of the RoboCup Federation. It currently has 22 members. The Trustee Board elects a president for a three-year term. The president nominates four vice-presidents, for America, Asia, Europe, and RoboCupJunior.

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Safety and Security

Leipzig is very safe and secure for its inhabitants and visitors. About 540,000 people live in the City of Leipzig, and the Halle-Leipzig region has a population of about 1 million. In 2013, more than 1.4 million tourists visited Leipzig and generated more than 2.7 million overnight stays. Using public transportation and walking in the streets are safe in Leipzig at all times. Crime rates, e. g. for pick-pockets, robberies, and sexual assaults are low, and definitely lower than in most cities with significant tourism.

Leipzig Trade Fair grounds are safeguarded by well-trained security personnel. The fairgrounds are fenced all around. Security guards are on duty around the clock and check the entry and exit points as well as access to the parking lots. Planning of security measures, personnel, and equipment is based on need, depending on the event type and size, and in coordination with local authorities.

Emergency Numbers (while in Leipzig)

Police	110
Fire Department	112
Medical Stand-by Duty	+49 341 116 117
Emergency number for blocking credit cards	+49 341 116 116

Emergency Numbers (at the venue)

Police station / Exhibition Centre	+49 341 678 1110
Fire Department / Exhibition Centre	+49 341 678 1112
First Aid Unit / Exhibition Centre	+49 341 678 1115

Directory assistance

Germany	+49 341 11833
International	+49 341 11834

**Information Offices for RoboCup 2016 participants
at the information desk signed with "LOC" in
Competition Hall 2, Tel.: +49 341 678 4530**

RoboCup
LEIPZIG
GERMANY **2016**
30 JUNE to 3 JULY COMPETITIONS
4 JULY SYMPOSIUM

Dear RoboCuppers,

We have come through two years of preparation. The sponsors and partners from politics, economic and scientific sector and especially the team of Leipzig Trade Fair made it possible to say:

Welcome to Germany!

Welcome to Saxony!

Welcome to the 20th RoboCup in Leipzig!

We wish all participants good luck in their competitions of the world championship of intelligent robots and no matter, if your team will carry the trophy home or not, we hope you will spend an interesting and unforgettable time in Leipzig, Saxony and Germany!

Your LOC



Gerhard K. Kraetzschmar



Oskar von Stryk



Ansgar Bredenfeld



Markus Geisenberger



Silvana Kürschner



Thomas Schmidt



Hanna Krajczyk



Nora Furchner



Vivian Degen

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Save the date:
The next RoboCup will be held
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robocup2016.org

