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University of Stuttgart
Germany

ELLIS Unit Stuttgart

Kick-Off Event

MAX PLANCK INSTITUTE
FOR INTELLIGENT SYSTEMS



Andreas Bulling and Ingo Steinwart

July 21, 2022

ellis-stuttgart.eu

What is ELLIS?

- **ELLIS** stands for
European **L**aboratory for **L**earning and **I**ntelligent **S**ystems
- Founded in 2018 as a pan-European AI network of excellence
- **Goals**
 - Secure Europe's sovereignty in machine learning as the driver for modern AI
 - Ensure highest level of AI research in the open societies of Europe
 - Retain academic excellence in Europe while also having economic impact and creating jobs

- **ELLIS Fellows:** Senior scientists with typically more than 10 years of post-PhD experience and h-index which typically is higher than 25. The median h-index of current fellows is 53.
- **ELLIS Scholars:** Junior scientists with up to 10 years of post-PhD experience. The h-index of the current group of current scholars is 14 or higher.
- ELLIS PhD & Postdoc Program

The three Pillars of ELLIS: Units

- Currently 35 units in 14 countries
- Form a network of research sites across Europe
- Peer-reviewed application process in which excellence of unit members is key



The three Pillars of ELLIS: Research Programs

- Currently 14 programs
- Focus on research areas with high potential impact
- Range from basic research in theory and algorithms to applications in health and climate sciences
- *<https://ellis.eu/programs>*



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- Bridge the gap between computer science, engineering, and the social sciences
- Collaborate with other local research initiatives, such as SimTech, IntCDC, AISA, IRIS, CyberValley, IMPRS-IS, ...
- Connect with globally renowned companies in the region
- Increase visibility and excellence in ML, AI, and intelligent systems, e.g., to help with large-scale initiatives, attract talent, ...





Prof. Dr. Andreas Bulling

Intelligent user interfaces, human-computer interaction, computer vision, eye tracking, collaborative intelligence

andreas.bulling@vis.uni-stuttgart.de 



Prof. Dr. Ingo Steinwart

Statistical learning theory, Kernel-based learning algorithms, cluster analysis, loss functions, learning from non i.i.d. data, reproducing kernel Hilbert spaces

ingo.steinwart@mathematik.uni-stuttgart.de 



Dominike Thomas

ellis-office@uni-stuttgart.de 



Dr. Paul Bürkner

Bayesian statistics and workflow, prior specification, uncertainty quantification, simulation-based inference, model comparison, multilevel modeling

paul-christian.buerkner@simtech.uni-stuttgart.de ↗




Dr. Katherine J. Kuchenbecker

Haptic interfaces, haptic sensing systems, robotics, robotic surgery, physical human-robot interaction

kjk@is.mpg.de ↗




Prof. Dr. Mathias Niepert

Representation learning for graph-structured data,
geometric deep learning, probabilistic graphical models,
intersection of ML and the simulation sciences
mathias.niepert@simtech.uni-stuttgart.de 



Prof. Dr. Michael Pradel

ML for program analysis, software security, static bug
detection, performance profiling and test generation
pradel@iste.uni-stuttgart.de 



Prof. Dr. Sabine Schulte im Walde

Natural language processing, computational modelling of
lexical-semantic linguistic phenomena

schulte@ims.uni-stuttgart.de 



Prof. Dr. Steffen Staab

Knowledge graphs, semantic web, intelligent user interfaces,
web science

steffen.staab@ipvs.uni-stuttgart.de 



Prof. Dr. Thang Vu

Natural language processing, digital phonetics,
language technologies

ngoc-thang.vu@ims.uni-stuttgart.de 

- Brings together expertise in intelligent user interfaces, interactive AI, intelligent human-computer mediation, human-robot interaction, and conversational agents
- Future: Grow the unit in additional areas that are crucial to realise the vision of “Collaborative Intelligence”



- Brings together expertise in natural language processing and programming language processing
- Future: work on “mixed tasks” that require to combine both, e.g., reasoning about code comments or processing human-provided requirements specifications



- Brings together expertise in statistical learning theory, Bayesian statistics, neural networks
- Future: methodological bridging between kernel methods, Bayesian methods, and deep neural networks



- Currently expertise in autonomous robots, robust touch sensing, and physical human-robot interaction
- Future: Expand research focus with the two professorships “Machine Learning and Robotics” and “Autonomous Systems” (under negotiation)



- Website: <https://ellis-stuttgart.eu/>
- GoogleScholar profile:
<https://scholar.google.com/citations?user=igxdB28AAAAJ&hl=en>
- Twitter account:
https://twitter.com/Ellis_Stuttgart
- YouTube channel: https://www.youtube.com/channel/UCRptdJinWs_x3g481juBXWA



- ELLIS-SimTech Junior Research Group: Dr. Luiz Chamon, previously University of Berkeley (starting 10/22)
- New unit members
 - W3 professorships “Machine Learning & Robotics” and “Autonomous Systems”
 - Further distinguished scientists from the university



- Fully-funded PhD internship program
 - For doctoral researchers from other ELLIS units (potentially also beyond)
 - About 10 internships per year
 - Planned to start in spring/summer 2023
- Setting up closer exchange and collaboration with other ELLIS units, including joint events and (extended) stays of doctoral researchers
- Hiring doctoral researchers through ELLIS PhD program

- Distinguished lecture series
First speaker: Frank Hutter, University of Freiburg, July 13
- Organisation of ELLIS events, such as workshops, conferences, or summer/winter schools
- Support existing and help found new local startups in the area of AI, machine learning, and intelligent systems
- Reaching out to local industry for collaboration in research, teaching, and sponsorship

Kick-off Event: Program

Time	Event	Location
09:00 - 09:20	Welcome: Andreas Bulling and Ingo Steinwart (Directors)	PWR 47.03
09:20 - 09:30	Welcome: Prof. Dr. Wolfram Ressel (Rector of the University of Stuttgart)	PWR 47.03
09:30 - 10:15	Keynote: Prof. Dr. Bernt Schiele (Max Planck Institute for Informatics)	PWR 47.03
10:15 - 10:45	Interactive Intelligent Systems: Steffen Staab (University of Stuttgart)	PWR 47.03
10:45 - 11:00	<i>Coffee Break (joint)</i>	PWR 47 (Foyer)
11:00 - 12:00	Poster Session I	PWR 47 (Foyer)
12:00 - 12:30	Natural and Programming Language Processing: Michael Pradel (University of Stuttgart)	PWR 47.03
12:30 - 13:00	PostDoc Lightning Talks I	PWR 47.03
13:00 - 14:00	<i>Lunch (individually on campus)</i>	PWR 47 (Foyer)
14:00 - 14:30	Learning Theory: Paul Bürkner (University of Stuttgart)	PWR 47.03
14:30 - 15:00	PostDoc Lightning Talks II	PWR 47.03
15:00 - 15:30	Robot Learning: Katherine J. Kuchenbecker (Max Planck Institute for Intelligent Systems)	PWR 47.03
15:30 - 15:45	<i>Coffee Break (joint)</i>	PWR 47 (Foyer)
15:45 - 16:45	Poster Session II	PWR 47 (Foyer)
16:45 - 17:00	Closing Remarks: Andreas Bulling and Ingo Steinwart	PWR 47.03
17:00 - open end	<i>Social Event / Get-together</i>	PWR 47 (Foyer)

Enjoy the kick-off event!