

Dagstuhl Seminar 23442

Approaches and Applications of Inductive Programming (12th AAIP)

Oct 29 – Nov 03, 2023

<https://www.dagstuhl.de/23442>

Organizers:

- [Luc De Raedt](#) (KU Leuven, BE)
- [Richard Evans](#) (DeepMind – London, GB)
- [Andrew Cropper](#) (University of Oxford, GB)
- [Ute Schmid](#) (Universität Bamberg, DE)

Tentative Schedule

Monday, Oct 30

Chair: Ute Schmid

09:00-10:00 Welcome – Organizers (Topic and goals of the seminar)
Short Introduction – Participants

10:00-10:30 Coffee Break

10:30-11:00 Talk (25+5)
Neuro-symbolic IP – Luc de Raedt

11:00-11:30 Talk (25+5)
IP Focus: Learning and Planning – Hector Geffner

11:30-12:00 Discussion

12:15-13:30 Lunch Break

Chair: Luc De Raedt

13:30-14:00 Talk (25+5)
XAI and IP – Ute Schmid & Bettina Finzel

14:00-14:30 Talk (25+5)
IP and Generative AI/LLMs – Gust Verbruggen

14:30-15:30 Short Talks (15+5 min)

- Making Program Synthesis Fast on a GPU – Martin Berger
- On the Need of Learning Disjointness Axioms for Knowledge Graph Refinement and for Making Knowledge Graph Embedding Methods More Robust – Claudia d’Amato

15:30-16:00 Coffee Break

16:00-16:40 Short Talks (15+5 min)

- Abstraction for Answer Set Programs – Zeynep Saribatur
- Using Program Synthesis to Model Strategy Diversity in Human Visual Reasoning – Maithilee Kunda

17:00-17:30 Demo Session 1

- RDFrules: A Swiss knife for relational association rule learning, classification and knowledge graph completion – Tomas Kliegr

18:00–19:00 Dinner

Tuesday, Oct 31 (Halloween)

Chair: Ute Schmid

09:00-10:00 Talks (25+5)
ILP – Sebastijan Dumančić

Talk (25+5)
Deep Rule Learning – Johannes Fürnkranz

Discussion

10:30-11:00 Coffee Break

11:00-12:00 Talks (25+5) – Cognitive Aspects of IP

- Human-like Few-Shot Learning via Bayesian Reasoning over Natural Language – Kevin Ellis
- The child as hacker – Josh Rule

12:15-13:30 Lunch

Chair: Luc De Raedt

13:30-14:00 Talk (25+5) Cognitive Aspects of IP continued
On Using Natural Language for Self-programming in Cognitive Architectures – Frank Jäkel

14:00-14:50 Setting up discussion groups

14:50-15:20 Demo Session 2

- Introduction to Louise – Stassa Patsantzis

15:20 Photo

15:30-16:00 Coffee Break

16:00-17:30 Discussion Groups

- (1) Search – how to avoid it – symbolic vs. subsymbolic (Hector)
- (2) Recent LLM models and IP/CogArch (Frank)

17:15-18:00 Wrap-up

18:00-19:00 Dinner

Wednesday, Nov 1 (Bank Holiday in Germany)

Chair: Ute Schmid

- 09:00-10:00 Demo Session 3
- Introduction to Popper – Celine Hocquette
- 10:00-10:30 Short Talks (15+5 min) – Logic, anti-unification and other formal aspects of IP
- Probabilistic Inductive Logic Programming: Quo vadis? – Felix Weitekämper
- 10:30-11:00 *Coffee Break*
- 11:00-11:30 Short Talks (15+5 min) – Logic, anti-unification and other formal aspects of IP cont.
- Anti-Unification and Generalization – David Cerna
 - Explainable models via compression of relational ensembles – Sriraam Natarajan
- 11:30-12:15 Discussion Groups
- 12:15-13:30 *Lunch*
- 14:00-16:00 Walk
- 16:00-18:00 Ad hoc groups and activities
- 18:00-19:00 *Dinner*

Thursday, Nov 2

Chair: Ute Schmid

- 09:00-10:00 Short Talks (15+5 min) – Special Applications of IP
- Effects of explaining machine-learned logic programs for human comprehension and discovery – Ai Lun
 - Meta-Interpretive Learning for Generalised Planning – Stassa Patsantzis
- 10:00-10:30 *Coffee Break*
- 10:30-11:45 Short Talks (15+5 min) – Special Applications of IP
- Relational program synthesis with numerical reasoning – Celine Hocquette & Andrew Cropper
 - A Neurodiversity-Inspired Solver for the Abstraction & Reasoning Corpus (ARC) Using Visual Imagery and Program Synthesis – Maithilee Kunda & James Ainooson
 - QCBA: improving rule classifiers learned from quantitative data by recovering information lost by discretisation – Tomas Kliegr
- 11:45-12:00 Planning Discussion Groups
- 12:15-13:30 *Lunch*

Chair: Ute Schmid

- 14:00-15:30 Short Talks (15+5 min)
- Towards Programmatic Reinforcement Learning – Nathanaël Fijalkow
- Demo Session 4
- EmFORE, Learning Rules to Sort E-Mails into Folders – Gust Verbruggen
- 15:30-16:00 *Coffee Break*
- 16:00-17:30 Continuation of Discussion Groups
- 17:30-18:00 Reports from discussion groups
- 18:00-19:00 *Dinner*

Friday, Nov 3

Chair: Ute Schmid

09:00-10:30 Summary discussion, evaluation, action points

10:30-11:00 *Coffee Break*

11:00-12:15 Outlook, establishing collaborations

Please note:

- For the introductory round one slide should be prepared: Each participant gives her/his personal background and main research interests in max. 3 minutes, please upload your slide at [Dagstuhl Materials Page](#) (Use personal credentials as created in DOOR to log in)
- The schedule is rather flexible, we currently scheduled longer talks at the first two days and short talks for the rest. Please also consider to give a demo of your IP system. If you are interested in giving a talk/demo please enter the information at [Dagstuhl Materials Page](#) (Use personal credentials as created in DOOR to log in)
- **Please avoid conference-style talks** -- these tend to provide more answers than questions. **Bring questions, show current ideas and insights, not all the details** (which are better discussed personally by the few people who are really interested).