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 Weitkämper

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  
- 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).