Andrew Cropper

andrew.cropper@cs.ox.ac.uk

Academic employment

Junior Research Fellow, Hertford College, University of Oxford	2018 -
Research Assistant, University of Cambridge	2013

Education

PhD Computer Science, Imperial College London Supervisor: Professor Stephen Muggleton	2013 - 2017
MSc Computer Science, University of Oxford Supervisor: Dr Brian Harrington	2010 - 2011
BSc Computer Science, Nottingham Trent University Supervisor: Dr Caroline Langensiepen	2005 - 2009

Industry employment

Researcher, MFG Labs, Paris, France	2012 - 2013
Software Engineer, Esendex, Nottingham	2009 - 2010
Software Engineer, Counter Solutions, Derby	2007 - 2008

Research visits

Massachusetts Institute of Technology Visited Professor Josh Tenenbaum	2016, 2018, 2019
KU Leuven Visited Dr Sebastijan Dumancic	2019
National Institute of Informatics, Tokyo, Japan Visited Professor Katsumi Inoue	2014, 2015, 2017

Awards

Best paper	ILP 2019
Best paper	ILP 2018
Best student paper	ILP 2014

Fellowships and scholarships

Junior research fellowship (~£117,842)	2018
Syngenta fellowship (£30,000)	2013
BBSRC PhD case studentship (£100,173)	2013

Grants

Google Cloud Platform grant ($5,000)	2019
National Institute of Informatics internship (¥370,500 ~£2,600)	2014

Supervision

I am/was the primary supervisor of the following students:

PhD theses

Rolf Morel, University of Oxford 2019 -

MSc theses

Rolf Morel, University of Oxford 2018

BSc projects

Cristian Dinu, University of Oxford 2021

Andrei Diaconu, University of Oxford 2020

Alastair Flynn, University of Oxford 2020

Research internships

Joar Skalse, University of Oxford 2018

Teaching

Introduction to Formal Proof, University of Oxford 2020

Computational Logic, Stanford University (Oxford campus) 2019

Publications

Journals

1. **A. Cropper** and S. Tourret. Logical reduction of metarules. *Machine Learning*, Nov 2019
2. **A. Cropper**, R. Evans, and M. Law. Inductive general game playing. *Machine Learning*, Nov 2019
3. **A. Cropper**, R. Morel, and S. H. Muggleton. Learning higher-order logic programs. *Machine Learning*, Dec 2019
4. **A. Cropper** and S. H. Muggleton. Learning efficient logic programs. *Machine Learning*, 108(7):1063–1083, Jul 2019

Conferences

1. **A. Cropper** and S. Dumančić. Learning large logic programs by going beyond entailment. IJCAI 2020
2. **A. Cropper**, S. Dumančić, and S. H. Muggleton. Turning 30: new ideas in inductive logic programming. IJCAI 2020
3. **A. Cropper**. Forgetting to learn logic programs. In *The Thirty-Fourth AAAI Conference on Artificial Intelligence, AAAI 2020, New York, NY, USA, February 7-12, 2020*, pages 3676–3683. AAAI Press, 2020
4. **A. Cropper**, R. Morel, and S. H. Muggleton. Learning higher-order programs through predicate invention. In *The Thirty-Fourth AAAI Conference on Artificial Intelligence, AAAI 2020, New York, NY, USA, February 7-12, 2020*, pages 13655–13658. AAAI Press, 2020
5. **A. Cropper**. Playgol: learning programs through play. In S. Kraus, editor, *Proceedings of the Twenty-Eighth International Joint Conference on Artificial Intelligence, IJCAI 2019, Macao, China, August 10-16, 2019*, pages 6074–6080. ijcai.org, 2019
6. S. Tourret and **A. Cropper**. SLD-resolution reduction of second-order horn fragments. In F. Calimeri, N. Leone, and M. Manna, editors, *Logics in Artificial Intelligence - 16th European Conference, JELIA 2019, Rende, Italy, May 7-11, 2019, Proceedings*, volume 11468 of *Lecture Notes in Computer Science*, pages 259–276. Springer, 2019

7. R. Morel, **A. Cropper**, and C. L. Ong. Typed meta-interpretive learning of logic programs. In F. Calimeri, N. Leone, and M. Manna, editors, *Logics in Artificial Intelligence - 16th European Conference, JELIA 2019, Rende, Italy, May 7-11, 2019, Proceedings*, volume 11468 of *Lecture Notes in Computer Science*, pages 198–213. Springer, 2019
8. **A. Cropper** and S. Tourret. Derivation reduction of metarules in meta-interpretive learning. In F. Riguzzi, E. Bellodi, and R. Zese, editors, *Inductive Logic Programming - 28th International Conference, ILP 2018, Ferrara, Italy, September 2-4, 2018, Proceedings*, volume 11105 of *Lecture Notes in Computer Science*, pages 1–21. Springer, 2018
9. **A. Cropper** and S. H. Muggleton. Learning higher-order logic programs through abstraction and invention. In S. Kambhampati, editor, *Proceedings of the Twenty-Fifth International Joint Conference on Artificial Intelligence, IJCAI 2016, New York, NY, USA, 9-15 July 2016*, pages 1418–1424. IJCAI/AAAI Press, 2016
10. **A. Cropper**. Logic-based inductive synthesis of efficient programs. In S. Kambhampati, editor, *Proceedings of the Twenty-Fifth International Joint Conference on Artificial Intelligence, IJCAI 2016, New York, NY, USA, 9-15 July 2016*, pages 3980–3981. IJCAI/AAAI Press, 2016
11. **A. Cropper** and S. H. Muggleton. Learning efficient logical robot strategies involving composable objects. In Q. Yang and M. Wooldridge, editors, *Proceedings of the Twenty-Fourth International Joint Conference on Artificial Intelligence, IJCAI 2015, Buenos Aires, Argentina, July 25-31, 2015*, pages 3423–3429. AAAI Press, 2015
12. **A. Cropper**, A. Tamaddoni-Nezhad, and S. H. Muggleton. Meta-interpretive learning of data transformation programs. In K. Inoue, H. Ohwada, and A. Yamamoto, editors, *Inductive Logic Programming - 25th International Conference, ILP 2015, Kyoto, Japan, August 20-22, 2015, Revised Selected Papers*, volume 9575 of *Lecture Notes in Computer Science*, pages 46–59. Springer, 2015
13. C. Farquhar, G. Grov, **A. Cropper**, S. Muggleton, and A. Bundy. Typed meta-interpretive learning for proof strategies. In K. Inoue, H. Ohwada, and A. Yamamoto, editors, *Late Breaking Papers of the 25th International Conference on Inductive Logic Programming, Kyoto University, Kyoto, Japan, August 20th to 22nd, 2015.*, volume 1636 of *CEUR Workshop Proceedings*, pages 17–32. CEUR-WS.org, 2015
14. **A. Cropper**. Learning efficient logic programs. In Q. Yang and M. Wooldridge, editors, *Proceedings of the Twenty-Fourth International Joint Conference on Artificial Intelligence, IJCAI 2015, Buenos Aires, Argentina, July 25-31, 2015*, pages 4359–4360. AAAI Press, 2015
15. **A. Cropper** and S. H. Muggleton. Can predicate invention compensate for incomplete background knowledge? In S. Nowaczyk, editor, *Thirteenth Scandinavian Conference on Artificial Intelligence - SCAI 2015, Halmstad, Sweden, November 5-6, 2015*, volume 278 of *Frontiers in Artificial Intelligence and Applications*, pages 27–36. IOS Press, 2015
16. **A. Cropper** and S. H. Muggleton. Logical minimisation of meta-rules within meta-interpretive learning. In J. Davis and J. Ramon, editors, *Inductive Logic Programming - 24th International Conference, ILP 2014, Nancy, France, September 14-16, 2014, Revised Selected Papers*, volume 9046 of *Lecture Notes in Computer Science*, pages 62–75. Springer, 2014

Workshops

1. S. Tourret and **A. Cropper**. SLD-resolution reduction of second-order Horn fragments. *Termgraph 2018*.
2. **A. Cropper**. Identifying and inferring objects from textual descriptions of scenes from books. In R. Neykova and N. Ng, editors, *2014 Imperial College Computing Student Workshop, ICCSW 2014, September 25-26, 2014, London, United Kingdom*, volume 43 of *OASICS*, pages 19–26. Schloss Dagstuhl - Leibniz-Zentrum fuer Informatik, 2014

Under review

1. **A. Cropper** and R. Morel. Learning programs by learning from failures. Under review.

In preparation

1. S. Dumančić and **A. Cropper**. Knowledge refactoring for logic program synthesis. In preparation.
2. **A. Cropper**, S. Dumančić, and S. H. Muggleton. Inductive logic programming at 30. In preparation.
3. **A. Cropper** and S. Dumančić. A new introduction to inductive logic programming. In preparation.

Services

Program committee / reviewer

Machine Learning Journal	2020
IJCAI	2019, 2020
AAAI	2020
ECAI	2020
ILP	2020
StarAI	2020

Other

IJCAI student volunteer	2015, 2016

Outreach / public engagement

TCS Oxford Computing Challenge, Oxford	2019

Talks

Inductive general game playing, KU Leuven	2019
Playgol: learning programs through play, KU Leuven	2019
Learning higher-order logic programs, KU Leuven	2019
Inductive general game playing, MIT	2019
Playgol: learning programs through play, MIT	2019
Playgol: learning programs through play, Machine Intelligence 21	2019
Inductive general game playing, Dagstuhl	2019
Playgol: learning programs through play, Dagstuhl	2019
Learning algorithms using logic, University of Oxford	2019
Learning efficient logic programs, MIT	2018
Learning efficient logic programs, Dagstuhl	2017
Learning higher-order logic programs, Dagstuhl	2017
Learning efficient logic programs, Machine Intelligence 20	2016
Logic-based learning of programs, UC Berkeley	2016
Metagol, Dagstuhl	2015
Predicate invention in meta-interpretive learning, Wakayama University	2014