

Research interests

Artificial intelligence and machine learning, specifically logic-based program induction and inductive logic programming.

Education

PhD Computer Science, Imperial College London Oct 2013 - Sep 2017 (expected)
Supervisor: Professor Stephen Muggleton
Thesis: Efficiently learning efficient programs

MSc Computer Science, University of Oxford Oct 2010 - Oct 2011
Supervisor: Dr Brian Harrington
Thesis: Predicting stock volume using Twitter

BSc Computer Science, Nottingham Trent University Oct 2005 - Jul 2009
Graduated with first-class honours
Supervisor: Dr Caroline Langensiepen
Dissertation: Identifying and inferring objects from natural language

Experience

Research Assistant, University of Cambridge Jul 2013 - Oct 2013
Worked with Dr Eiko Yonkei on distributed asynchronous graph algorithms

Research Engineer, MFG Labs, Paris, France Jan 2012 - Jul 2013
Designed large-scale machine learning algorithms

Software Engineer, Esendex, Nottingham Jan 2010 - Oct 2010
Developed analytical tools to monitor SMS traffic

Software Engineer, Counter Solutions, Derbyshire Jun 2007 - Oct 2008
Developed analytical tools to monitor servers

Research visits

Visiting researcher, Massachusetts Institute of Technology Jul 2016
Visiting Professor Josh Tenenbaum in the computational cognitive science group

Visiting researcher, National Institute of Informatics, Tokyo, Japan Aug 2015 - Sep 2015
Visiting Professor Katsumi Inoue

Research intern, National Institute of Informatics, Tokyo, Japan Oct 2014 - Dec 2014
Worked with Professor Katsumi Inoue on comparing meta-interpretive learning and meta-level abduction

Awards and grants

- *Machine Learning Journal* best student paper ILP 2014
- National Institute of Informatics international internship program Oct 2014 - Dec 2014
- Syngenta fellowship Oct 2013 - Oct 2017
- Full BBSRC PhD case studentship Oct 2013 - Oct 2017

Publications

Conference papers

1. A. Cropper and S.H. Muggleton. Learning higher-order logic programs through abstraction and invention. In *Proceedings of the 25th International Joint Conference Artificial Intelligence (IJCAI 2016)*, pages 1418-1424. IJCAI, 2016.
2. A. Cropper and S.H. Muggleton. Learning efficient logical robot strategies involving composable objects. In *Proceedings of the 24th International Joint Conference Artificial Intelligence (IJCAI 2015)*, pages 3423-3429. IJCAI, 2015.
3. A. Cropper, A. Tamaddoni-Nezhad, and S.H. Muggleton. Meta-interpretive learning of data transformation programs. In *Proceedings of the 25th International Conference on Inductive Logic Programming (ILP2015)*, pages 46-59. Springer-Verlag, 2015. LNAI 9046.
4. C. Farquhar, G. Grov, A. Cropper, S.H. Muggleton, and A. Bundy. Typed meta-interpretive learning for proof strategies. In *Late Breaking Papers of the 25th International Conference on Inductive Logic Programming*, pages 17-32, 2015.
5. A. Cropper and S.H. Muggleton. Can predicate invention compensate for incomplete background knowledge? In *Thirteenth Scandinavian Conference on Artificial Intelligence - SCAI 2015*, Halmstad, Sweden, November 5-6, 2015, pp. 27-36.
6. A. Cropper and S.H. Muggleton. Logical minimisation of meta-rules within meta-interpretive learning. In *Proceedings of the 24th International Conference on Inductive Logic Programming (ILP2014)*, pages 62-75. Springer-Verlag, 2015. LNAI 9046.

Workshop papers

1. A. Cropper. Identifying and inferring objects from textual descriptions of scenes from books. In *2014 Imperial College Computing Student Workshop, ICCSW 2014*, September 25-26, 2014, London, United Kingdom, pp. 19-26.

Extended abstracts

1. A. Cropper. Logic-based inductive synthesis of efficient programs. In *Proceedings of the 25th International Joint Conference Artificial Intelligence (IJCAI 2016)*, pages 3980-3981. IJCAI, 2016.
2. A. Cropper. Learning efficient logic programs. In *Proceedings of the 24th International Joint Conference Artificial Intelligence (IJCAI 2015)*, pages 4359-4360. IJCAI, 2015.

Talks

- Learning efficient logic programs, Machine Intelligence 20 workshop on human-like computing, London, Oct 2016.
- Learning higher-order logic programs through abstraction and invention, ILP16, London, Sep 2016.
- Logic-based inductive synthesis of efficient programs, IJCAI16 doctoral consortium, New York, Jul 2016.
- Logic-based learning of programs from input/output examples, UC Berkeley, Jun 2016.
- Can predicate invention compensate for incomplete background knowledge? SCAI15, Halmstad, Nov 2015.
- Meta-interpretive learning of data transformation programs, ILP15, Kyoto, Aug 2015.
- Learning efficient logical robot strategies involving composable objects. ILP15, Kyoto, Aug 2015.
- Learning efficient logical robot strategies involving composable objects. IJCAI15, Buenos Aires, Jul 2015.
- Learning efficient logic programs, IJCAI15 doctoral consortium, Buenos Aires, Jul 2015.
- Meta-interpretive learning normal logic programs, Meeting on meta-interpretive learning, Imperial College London, Jan 2015.
- Predicate invention in meta-interpretive learning, Meeting on abductive and inductive reasoning, Wakayama University, Dec 2014.

- Logical minimisation of meta-rules within meta-interpretive learning, ILP14, Nancy, Sep 2014.
- Can predicate invention in meta-interpretive learning compensate for incomplete background knowledge? ILP14, Nancy, Sep 2014.
- Identifying and inferring objects from textual descriptions of scenes from books, Imperial College Computing Student Workshop, London, Sep 2014.