Homepage: http://homepages.inf.ed.ac.uk/s0199173/
Email: moakristin.johansson@univr.it

Moa Johansson

Education & Research

Research Associate, Università degli Studi di Verona, Italy
Oct 2009 – Sept 2010
- One year post doctoral position on a project entitled "Integrating automated reasoning in model checking: Towards push-button formal verification of large-scale and infinite-state systems", funded by the Italian ministry of research (Ministero dell'Istruzione, dell'Università e della Ricerca).

PhD in Informatics, University of Edinburgh, UK
Sept 2005 – June 2009
Title: *Automated Discovery of Inductive Lemmas*
Supervisors: Prof. Alan Bundy and Dr. Lucas Dixon

We have developed techniques for discovering theorems and lemmas in the context of inductive theorem proving, exploring both techniques for theorem synthesis and for using information from failed proof attempts.

- Received a full scholarship funded by the Engineering and Physics Research Council (EPSRC).
- Assisted my supervisor in preparing a successful grant renewal report of the 'Platform Grant', which is the main source of funding for the research group.
- Co-organised a workshop about the Isabelle theorem prover at the CADE-conference 2007.

Research Associate, University of Edinburgh, UK
Aug - Sept 2005
- Conducted further research on my final year undergraduate project and wrote a paper on the results. The results were also presented at the STRATEGIES workshop at the FLoC conference 2006 and published as a book chapter.

BSc (Hons) Artificial Intelligence and Computer Science,
University of Edinburgh, UK
Oct 2001 - June 2005
- Received the highest grade (1st).
- Final year project: "Best-First Rippling" Supervised by Alan Bundy and Lucas Dixon. Implemented and evaluated a best-first version of the rippling heuristic for automating inductive proofs.
- Specialist courses taken:

Artificial Intelligence
Automated Reasoning
Vision & Robotics
Knowledge Engineering
Learning from Data
Cognitive Modelling
Multi-agent Semantic Web Systems
Human-Computer Interaction
Informatics Research Methodologies

Computer Science
Formal Programming Language Semantics
Language Semantics and Implementation
Advances in Programming Languages
Algorithms & Data Structures
Design and Analysis of Parallel Algorithms
Computer Communications
Functional Programming and Specification
Types and Programming Languages

'Gymnasieexamen' (High School) Natural Science Programme,
Midskogsskolan, Luleå, Sweden
Aug 1997 - June 2000
- Swedish pre-university qualification. Included mathematics, chemistry, physics and biology as well as languages; Swedish, English and French.

Organisational

- Isabelle Workshop 2007. Co-chair.
- Workshop on Automated Mathematical Theory Exploration (Automatheo) 2010. Program committee member.

Teaching Experience

Teaching Assistant, University of Edinburgh, UK
Jan - March 2007
- Prepared and marked coursework for a second year undergraduate Informatics course about reasoning and logic.

Tutor, University of Edinburgh, UK
- 1st year undergraduate Informatics (computation and logic, functional programming in Haskell). Sept – Dec 2008.
- 2nd year undergraduate Informatics (reasoning, logic, probability). Jan - March 2006, 2007 and 2008.
- Algorithms and Data Structures, Sept - Dec 2005.
- I also attended courses on tutoring, marking and assessment for Edinburgh University postgraduates.

Industry Experience

Summer Internship, Morgan Stanley, London, UK
June - Aug 2003 and June - Aug 2004
- Spent two summers working in the IT department of an investment bank while an undergraduate.
- Web and database programming, javascript and SQL. Linux/UNIX shell scripts.

Programming Languages

Good knowledge:
- Standard ML (used for my PhD project), Java, Prolog, Haskell

Medium:
- SQL, HTML/CSS/javascript, O'Caml

Basic:
- C#, C, Perl

Languages

I am a native speaker of Swedish, and also fluent in English after living in Scotland for many years. I also speak basic Italian and a little bit of French.

Interests

I train and compete in snowboarding and have won the Scottish championships, several British student championships and have taken part in international competitions around Europe. For the year 08/09 I received a bursary from the University of Edinburgh as one of its top athletes.

Publications

Conjecture Synthesis for Inductive Theories. *Moa Johansson, Lucas Dixon and Alan Bundy.* Under revision for publication in the Journal of Automated Reasoning.

Lemma Discovery and Middle-Out Reasoning for Automated Inductive Proofs. *Moa Johansson, Lucas Dixon and Alan Bundy.* Submitted to conference.
Available online: http://dream.inf.ed.ac.uk/projects/isaplanner/papers/case-split-rippling-2010.pdf

Case-Analysis for Rippling and Inductive Proof. *Moa Johansson, Lucas Dixon and Alan Bundy.*
Submitted to conference. Early version available as University of Edinburgh, School of Informatics Technical

Report EDI-INF-RR-1326.
Available online: *dream.inf.ed.ac.uk/projects/isaplanner/papers/case-split-rippling-09.pdf*

IsaCoSy: Synthesis of Inductive Theorems. *Moa Johansson, Lucas Dixon and Alan Bundy*. Workshop on Automated Mathematical Theory Exploration (Automatheo), 2009.
Available online: dream.inf.ed.ac.uk/projects/isaplanner/papers/automatheo-isacosy-09.pdf

IsaPlaner 2: A Proof Planner in Isabelle. *Lucas Dixon and Moa Johansson*. University of Edinburgh, School of Informatics Technical Report EDI-INF-RR-1302, 2007.
Available online: *dream.inf.ed.ac.uk/projects/isaplanner/docs/isaplanner-v2-07.pdf*

Best-First Rippling. *Moa Johansson, Alan Bundy and Lucas Dixon*. In O. Stock and M. Schaerf (Eds.): *Reasoning, Action and Interaction in AI theories and Systems: Essays dedicated to Luigia Carlucci Aiello*, LNAI 4155, pp. 83-100, 2006. Springer-Verlag.
Available online: *dream.inf.ed.ac.uk/projects/bfrippling/bfrippling.pdf*