$\square (+44) 07570804529$  $\bowtie michael@rawsons.uk$ rawsons.uk/michael

# Michael Rawson

# Brief

I am a computer scientist working in the area of automated theorem proving. My main goal is to build computer systems that can reason effectively, but also *learn* from past experience. I keep a log of my activities <u>online</u>, and my publications are indexed by Google Scholar.

### Timeline

2025 -	<b>New Frontiers Fellow</b> , University of Southampton, UK
2021 - 25	<b>Projektassistent</b> , TU Wien, Austria
2020 - 21	Research Associate, University of Manchester, UK
2017 - 21	<b>PhD</b> , University of Manchester, UK
2014 - 17	<b>BA Computer Science</b> , University of Cambridge, UK

# Research

My main line of research applies machine learning to theorem proving, tackling related problems such as learning from syntactic data and performance considerations. I am also interested in the theory and practice of first-order reasoning, connection and tableau methods, satisfiability solvers and their applications, parallel and distributed theorem proving, evaluation of theorem provers, software verification, game theory, security, and interactive theorem proving. I maintain VAMPIRE, a world-class theorem prover, and a variety of other research software.

# Teaching

- 2021– I run a course in which students present a paper, and assist with supervision of research students.
- 2017–21 Teaching assistant for a variety of undergraduate and graduate courses. Outreach lectures and activities.
- 2014–17 Volunteer with  $\underline{STIMULUS}$ , working in local schools.

# Selected Activities

- Recurring Co-chair, International Workshop on the Implementation of Logics Program committee, Conference on Artificial Intelligence and Theorem Proving Organiser, VAMPIRE Workshop Committee, <u>VCLA Student Awards</u>
  - 2024 Organiser, <u>EuroProofNet Workshop</u> on Alignment of Proof Systems and Machine Learning

Artefact evaluation co-chair, Tools and Algorithms for the Construction and Analysis of Systems

2023 Invited talk at the Joint EuroProofNet Workshops

Program committee, International Conference on Automated Reasoning with Analytic Tableaux and Related Methods

2022 Invited talk at the Conference on Artificial Intelligence and Theorem Proving

#### Selected Publications

2024 Rewriting and Inductive Reasoning. Márton Hajdu, Laura Kovács, Michael Rawson

Scaling Game-Theoretic Security Reasoning. Sophie Rain, Lea Salome Brugger, Anja Petković Komel, Laura Kovács, Michael Rawson

CryptoVampire: Automated Reasoning for the Complete Symbolic Attacker Cryptographic Model. Simon Jeanteur, Laura Kovács, Matteo Maffei, Michael Rawson

2023 CheckMate: Automated Game-Theoretic Security Reasoning. Lea Salome Brugger, Laura Kovács, Anja Petković Komel, Sophie Rain, Michael Rawson Non-Classical Logics in Satisfiability Modulo Theories. Clemens Eisenhofer, Ruba Alassaf, Michael Rawson, Laura Kovács

Lemmas: Generation, Selection, Application. Michael Rawson, Christoph Wernhard, Zsolt Zombori, Wolfgang Bibel

Superposition with Delayed Unification. Ahmed Bhayat, Johannes Schoisswohl, Michael Rawson

 $SAT\mbox{-}based$  Subsumption Resolution. Robin Coutelier, Laura Kovács, Michael Rawson, Jakob Rath

- 2022 The RAPID Software Verification Framework. Pamina Georgiou, Bernhard Gleiss, Ahmed Bhayat, Michael Rawson, Laura Kovács, Giles Reger
- 2021 A Multithreaded VAMPIRE with Shared Persistent Grounding. Michael Rawson, Giles Reger

On Evaluating Theorem Provers. Michael Rawson, Giles Reger

*lazyCoP: Lazy Paramodulation meets Neurally-Guided Search.* Michael Rawson, Giles Reger

Eliminating Models during Model Elimination. Michael Rawson, Giles Reger

- 2020 Directed Graph Networks for Logical Reasoning. Michael Rawson, Giles Reger
- 2019 A Neurally-Guided, Parallel Theorem Prover. Michael Rawson, Giles Reger