Michael Rawson

Curriculum Vitae

PhD student working on unusual AI problems

M (+44) 07570804529
E michael@rawsons.uk
W rawsons.uk/michael

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British National

Brief

I am a doctoral student in Computer Science working on adding "mathematician's intuition" to computer programs that can perform logical reasoning. As I near the end of my programme of study, I am looking for fresh opportunities to solve difficult problems with cutting-edge research and engineering.

Education

BA Computer Science, *University of Cambridge*, 2.i. **2014–2017**

PhD Computer Science, *University of Manchester*. **2017–**

Employment

Software development intern, *RealVNC Ltd*. **Summer 2015**

Developed a build script to parse API headers and generate idiomatic Python bindings and documentation for inclusion in the RealVNC SDK. Still in use as of 2019.

Undergraduate research opportunity (UROP), *Computer Laboratory, University of Cambridge*. **Summer 2016**

Helped with various academic activities. Produced a computer graphics practical course from scratch for the second-year undergraduate programme.

Software development intern, *Redgate Software Ltd*. **Summer 2017**

Internal systems developer. General development, unit testing and an informal feasibility study of "NoSQL" technology for high-throughput event storage and analytics.

Teaching assistant, *University of Manchester*. **2017–**

Teaching assistant for undergraduate and taught postgraduate courses. The role covers a large number of different topics and includes teaching and assessment.

Consultant, *Critical Future Ltd*. **2018–2019**

Acted as a part-time machine learning / "data science" client-facing consultant for an industrial project centred around predictive maintenance.

Consultant, *Zenith Choice*. **Summer 2019**

Brought on to survey and deliver a report on all aspects of information technology use within a startup company. Added significant value for top-level management by communicating technological issues and existing infrastructure design in plain English.

Research interests

I am interested in the application of modern AI techniques to formal methods, and more generally in both of these areas individually. Details of my talks and publications can be found on my academic CV, or a subset on Google Scholar.

Practical skills

I have over a decade's experience in and around software systems, resulting in a broad set of both technical and non-technical skills. Some skills which I feel are unusual are highlighted below.

Machine learning: I apply and evaluate machine-learning methods on various domains in academia and industry. I routinely design, tweak and optimise deep neural network architectures on exotic domains for my research. Recently I have begun to use reinforcement learning techniques where necessary.

Formal verification: My bachelor's thesis deals with interactive formal verification of a branch of mathematics, and my current research can be applied to automatic verification on any domain. I can use industrial-strength tools to argue formally yet concisely within a verified environment.

Programming languages: I am a long-time programming language nerd, and take pleasure in following advances in modern language design. I know a good amount of programming language theory and have some experience with implementing (optimising) translators.

Systems programming and optimisation: Many tasks in my research or employment have required optimisation or careful programming *ab initio*. I can profile and optimise application performance, and I am familiar with the broader context of low-level programming.

"Soft" skills: I do not believe that people in technical disciplines should be limited to technical contributions. I have spoken to persuade and inform both technical and non-technical audiences, taught a variety of subjects, delivered consulting services, and managed a mid-size collegiate sports team.

Volunteer work

I volunteer my time where I feel I can enact positive change. Before university, I taught other students computer science and mathematics topics when professional teaching time was limited. I was also heavily involved in the open-source community, where I contributed patches, artwork, testing and user support. At university I took part in the STIMULUS organisation, helping to deliver STEM classes in local schools. I continue to be involved in outreach programmes: I deliver lectures and activities for several university-organised "student masterclass" series.