

David Ralph

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Personal Statement

Hardworking, proactive, fast learner, with a keen interest in cognitive computing, data science, and machine learning. I seek high quality, practical solutions and find enjoyment in creative problem solving and overcoming challenges. I have good linguistic skills and can communicate complex ideas clearly and concisely, including to non-technical people. My primary aim is always to become more practiced and knowledgeable in my field and to make meaningful contributions individually or as part of a team.

Education

University of Southampton (2017 – To Date)

PhD Computer Science

Key Research Areas:

- Search & Recommendation Systems
- Natural Language Processing
- Neural Language Models
- Applied Machine Learning
- Deep Learning
- Prescriptive Analytics
- Data Visualisation
- Data Provenance
- Sparse Data
- Cold-Starts

Thesis Topic

Relationship Discovery from Heterogeneous Data

How can search and recommendation systems be improved by understanding the relationships between heterogeneous documents? My research aims to apply recent advances in machine learning, data modelling, and statistical techniques to the problem of identifying the best candidates for formation of new relationships between entities in heterogeneous datasets based on machine understanding of natural language text.

Most Recent Publication

[Recommendations from Cold Starts in Big Data](#)

Published, peer-reviewed and presented at The 4th International Conference on Internet of Things, Big Data and Security

Introduces Transitive Semantic Relationships (TSR), a new technique for ranking recommendations from cold-starts in datasets with very sparse, partial labelling, by making use of semantic embeddings of item descriptions. Also introduces a new dataset on the Isle of Wight supply chain. TSR has applications in inferring additional relationships in partially labelled datasets, highlighting potential items of interest for human review, and for use as a recommendation algorithm, either standalone or supporting traditional recommender systems in difficult cold-start situations.

University of Portsmouth (2013 – 2017)

MEng Computer Science – 1st Class Master's Degree

Key Modules:

- Computer Security
- Web Server Programming
- Computer Graphics & Vision
- Neural Networks & Genetic Algorithms
- Distributed & Parallel Systems
- Software Engineering
- Computer Networks
- Database Systems

Dissertation Project

Augmented Reality Asbestos Surveying

Worked with Hampshire Scientific Services on a real-world project to create an augmented reality mobile app for viewing and recording of asbestos sources. Developed for Android using the Wikitude Augmented Reality SDK. Presented at university's student conference March 2016.

Group Industrial Project

Personal Assistant for Connected Cars

Worked with IBM and four other students to produce an after-market system for driver assistance in connected cars, leveraging IBM Watson cognitive services and state-of-the-art computer vision and machine learning technologies.

Employment

AI Engineer, Head of Research at Launch International LTD (2017 – To Date)

Lead developer of Launch Find Engine. Ongoing part-time advisory and software engineering role focused on data analysis and AI / Machine Learning tooling and applications. Annual placements as part of PhD candidature.

Full-Stack Developer at KnowNow Information (2016 – To Date)

Developed a client project with KnowNow Information, working alongside another student full time (part time during academic term) from July 2016 – August 2017. Responsible for creating the **RESTful API services, databases**, web scraper and **data analysis tools**, and admin user interface, as well as design, planning, and testing of all areas of the project. Additionally, made major extensions to the main user interface (using **Google Polymer**), and regularly liaised with the client. Elements of the API and web scraper utilise **Open Data, Linked Data**, and **IBM Watson** Cognitive Services. The project is hosted on the **IBM Cloud** platform for which I managed environment and service setup.

Skills

Object Oriented Programming	Java, Python, Visual Basic, C++
Functional Programming	Haskell, JavaScript (ES6)
Web programming	Semantic HTML5, CSS3, JavaScript, Node.JS, Express, RESTful APIs, Mocha (unit testing) , PHP, Java EE
Databases	Relational databases, normalisation, MySQL, Document databases, MongoDB, Mongoose , GridFS
Misc.	Data Mining , Machine Learning, Concurrent & Parallel Programming Version Control (Git), Issue Tracking (GitHub) , Electronics

* **Bold** indicates industry experience

Other Experience

Volunteer Senior Committee Member for Hack Pompey (2015 – To Date)

Helping plan and organise the largest annual hackathon on the South Coast. Hack Pompey is an event where people from all backgrounds and disciplines join together to learn, work together, and realise creative projects and ideas.

VP Tech for University of Portsmouth IT Society (2015 – 2017)

Organised, produced teaching materials for, and ran student workshops on Web technologies (HTML5, CSS, JavaScript), Version control (Git), and Python Game Development. • Provided 1-to-1 support to students regarding programming, version control (Git), maths, and logic. • Arranged talks and extra-curricular lectures from university staff and industry guests.

Events & Competitions	Team	Award
Hack Junction 2017	Les Fibe	Most Creative Use of the Spotify Platform
NASA Space Apps 2017 – IBM Hursley	Les Fibe	Winning Team (Regional)
Pub Hack Portsmouth 2016	Les Fibe	Best use of technology
Cyber Security Challenge UK 2016	DropTableUsers	
ACM UKIEPC Programming Contest 2014 & 2015	UP4IT (2014) MGDR (2015)	
Google Hash Code 2017		
Hack Pompy 4, 6, 7, 8	(Event Organiser)	

Projects

Demos of many of my academic and side projects can be found at davidralph.github.io/portfolio
The full source code for these can be found on public repositories at github.com/DavidRalph

Interests

I enjoy reading and like to keep up with various topics in other sciences, I have a particular interest in particle physics, quantum mechanics, cosmology and astronomy, as well as a general interest in ancient and classical history. I am also an avid fan of both classic and modern science-fiction novels.

References available on request.