

# Curriculum Vitae

Joseph Singleton

## Personal Details

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## Research Interests

My PhD research looks at aspects of handling unreliable information, particularly when conflicting information is received from multiple sources. The central question in this scenario is how such information should be aggregated, and which sources should be trusted. I explore these themes using the formal methods of computational social choice, belief revision theory and epistemic modal logic.

## Education

- **October 2019 - present:**  
PhD candidate, School of Computer Science & Informatics, Cardiff University. Supervisors: Dr. Richard Booth and Dr. Martin Caminada.
- **September 2015 - July 2019:**  
BSc Computing and Mathematics, Cardiff University. Awarded First Class Honours, 9th July 2019.

## Awards and Funding

- ‘Best Student Paper’ at NMR (2022).
- ‘Best Long Paper’ at ESSLLI 2021 student session (2021).
- PhD Scholarship, School of Computer Science & Informatics, Cardiff University (October 2019 to September 2022).
- Joint award for ‘Best Final Year Project’ (2019). Awarded for my undergraduate dissertation, titled ‘Implementation and Analysis of Truth Discovery Algorithms’.
- ‘Best Overall Performance in Year One Mathematics’ (2016). Awarded by the School of Mathematics, Cardiff University.

## Publications and Research Outputs

- “[Towards an axiomatic approach to truth discovery](#)”. Joseph Singleton and Richard Booth (2022). *Autonomous Agents and Multi-Agent Systems*.
- “[Truth-Tracking with Non-Expert Information Sources](#)”. Joseph Singleton and Richard Booth (2022). *NMR 2022*.

- “Who’s the Expert? On Multi-source Belief Change”. Joseph Singleton and Richard Booth (2022). *KR 2022*.
- “A Logic of Expertise”. Joseph Singleton (2021). *ESSLLI 2021 student session*.
- “Rankings for Bipartite Tournaments via Chain Editing”. Joseph Singleton and Richard Booth (2021). *AAMAS 2021*.
- “On the link between truth discovery and bipolar abstract argumentation”. Joseph Singleton (2020). *Online Handbook of Argumentation for AI: Volume 1*, p43.
- “Truth Discovery: Who to Trust and What to Believe” (extended abstract). Joseph Singleton (2020). *AAMAS 2020 doctoral consortium*.
- “An Axiomatic Approach to Truth Discovery” (extended abstract). Joseph Singleton and Richard Booth (2020). *AAMAS 2020*.
- “Implementation and Analysis of Truth Discovery Algorithms”. Joseph Singleton (2019). Undergraduate dissertation, Cardiff University.
- Web interface to the software developed in my undergraduate dissertation. <https://truth.joesingo.co.uk/>

### Co-authored Publications (software contributions)

- “astrosources: automating optical astronomy measurement, calibration and analysis for variable stellar sources from provided photometry”. Fitzgerald et. al. (2021). *The Journal of Open Source Software*.
- “Developing an Open Data Portal for the ESA Climate Change Initiative”. Kershaw et. al. (2020). *Data Science Journal*.

### Talks

- “Truth-Tracking with Non-Expert Information Sources”. Presented at Cardiff University (July 2022) and *NMR 2022* in Haifa, Israel.
- “Who’s the Expert? On Multi-source Belief Change”. Presented at *KR 2022* in Haifa, Israel.
- “A Logic of Expertise”. Presented via Zoom at the *ESSLLI 2021 student session*, August 2021.
- “Rankings for Bipartite Tournaments via Chain Editing”. Seminar presented at Cardiff University (October 2020) and *AAMAS 2021* (April 2021; pre-recorded<sup>1</sup>)
- “Preliminary Considerations on the Link Between Truth Discovery and Bipolar Argumentation”. Presented via Zoom at *The wisdom and madness of crowds: argumentation, information exchange and social interaction* workshop, *ILLC*, April 2020.
- “An Axiomatic Approach to Truth Discovery”. Seminar presented at *CRIL*, Université d’Artois (November 2019), Cardiff University (December 2019) and *AAMAS 2020* (April 2020; pre-recorded<sup>2</sup>).

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<sup>1</sup><https://slideslive.com/38954902/rankings-for-bipartite-tournaments-via-chain-editing>

<sup>2</sup><https://underline.io/lecture/147-an-axiomatic-approach-to-truth-discovery>

## Teaching and Administration

- **Postgraduate research student academic representative secretary (2019-21) and chair (2021-22).** The role of an academic rep is to collect feedback and concerns from students, and to raise these issues in meetings with staff in the school. The secretary has additional administrative duties such as circulating meeting agendas and writing meeting minutes; duties of the chair include chairing meetings and attending weekly staff meetings.
- **Undergraduate group project supervisor (2020-22).** I was the supervisor for groups of 2nd-year undergraduate students undertaking group projects. Duties include holding weekly group meetings, recording student contributions, and marking a portion of their final coursework.
- **Lab assistant for “Algorithms and Data Structures” (2019-20), “Artificial Intelligence” (2020-22).** Duties include helping undergraduate students to complete programming tasks and exercises, and answering student questions.

## Work Experience

- **Las Cumbres Observatory<sup>3</sup> (summer 2019)**

For 3 months in the summer of 2019 I worked as a software intern at LCO. My work primarily related to the open source TOM toolkit project for managing astronomical data and scheduling observations. I developed new features intended for education use, such as creating timelapses of time series image data and running data processing pipelines on a selection of data files through a web interface.

- **Centre for Environmental Data Analysis<sup>4</sup> (September 2017 - August 2018)**

After my second year of undergraduate study I completed a year-long placement at CEDA within STFC (Science and Technology Facilities Council) in a software development role. My work included building a search engine with Django and Elasticsearch, publishing large climate science datasets and Linux system administration.

- **ITDev<sup>5</sup> (summer 2015, 2016, 2017)**

I worked as software development intern at ITDev for three consecutive summers, returning the second and third times after receiving a sponsorship from ITDev whilst studying at university.

I worked on various software projects, including a C++ application to detect a person's heart rate from a webcam feed, an open source tool to create and manage clusters of virtual machines, and the company's internal website.

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<sup>3</sup><https://lco.global/>

<sup>4</sup><https://www.ceda.ac.uk/>

<sup>5</sup><https://www.itdev.co.uk/>