



Christopher Briggs

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Job experience

PhD Researcher at Keele University

07/18 – present

- Training as a research scientist/engineer whilst pursuing a PhD in the school of computing and mathematics
- Research focuses on privacy-preserving distributed machine learning and its application to smart energy applications under the [Keele Smart Energy Network Demonstrator](#)
- Prize winning research output awarded by the university at multiple internal symposia
- 3 accepted peer-reviewed works to date (book chapter, IJCNN conference paper & NeurIPS workshop paper)
- Contributed to many other university projects including:
 - Detection of malignant tumours in long bones via x-ray imagery
 - Scoping review on smart local energy systems for the [Zero Carbon Rugelely project](#)
 - Development of a web-based sustainability education game
- Organiser for the school's machine learning & computational intelligence research group
- School sustainability representative
- Lecturing/practical tutoring support for various computer science modules up to and including master's level

Research Software Engineer at Keele University

05/17 – 07/18

- Project focused on user-centered design of a learning analytics platform
- Developed a data processing pipeline consuming various university data sources
- Employed clustering and decision tree algorithms to predict student attainment from learning progress
- Architected API and customisable frontend dashboard to display learners' data to each student
- Designed and led student usability sessions to provide feedback for improving the front-end dashboard
- Dissemination of the research outputs internally within the university and at various conferences/workshops

Lead Software Engineer at TheLADbible group

06/16 – 05/17

Software Engineer at TheLADbible group

04/15 – 06/16

- Led team of frontend and backend software engineers
- Delivered internal systems for content acquisition, writing and editing processes
- Designed and developed an overhaul of content APIs, build process, content delivery pipeline and the website for UK's 10th most trafficked web property (LadBible.com) as well as sister sites
- Worked with data science function in delivering analysis for viral trend prediction

Technical Director at Localtraders.com

10/09 – 04/15

Responsible for the complete design and development of this lead generation service including the site – localtraders.com, the custom CRM, various data analysis tools and the setup, management and optimisation of a small linux server cluster to service the business's needs. The site serviced 5k+ clients and delivered in excess of 250k enquiries to tradespeople in the UK via an SMS mechanism.

Lead Technical Developer at Redsauce.com

03/09 – 02/12

Headed up a team of designers and developers at this SEO agency. Built entire suite of tools required by the SEO team including various data mining tools to gather web statistics, an SEO friendly, customisable ecommerce system as well as content generation tools to quickly create material for the company's clients.

Web Developer at Austin Barrett Brock

09/07 – 03/09

Sole web designer/developer at this full service creative agency. Focused on creating email campaigns, micro-sites and Flash projects for various industry clients including Norgren, Komatsu and Tektronix.

Education

Keele University

2018 - present

PhD Computer Science

Project title: Privacy-preserving Federated Learning for Smart Energy Applications

University of Central Lancashire (UCLan)

2012 - deferred

BSc (Hons) Astronomy via part-time distance learning

Completed year 1 and 2 modules including modules in astronomy, cosmology, mathematics and physics. Year 3 modules currently deferred. Predicted a 1st class.

Further education via Coursera.org

deeplearning.ai

Deep Learning Specialisation (Andrew Ng)

2018

Completed 5 courses in the specialisation comprising: Neural networks & deep learning, Improving deep neural networks, Structuring machine learning projects, Convolutional neural networks and Sequence models.

Stanford University

Machine Learning (Andrew Ng)

2017

Understanding of how to build, predict and evaluate common machine learning algorithms including, neural networks, support vector machines and clustering methods.

University of Washington

Introduction to Data Science

2013

Application of Python, SQL and NoSQL to data science topics including data mining, MapReduce problems, statistical modelling and data visualisation.

University of Washington

High Performance Scientific Computing

2013

Application of Python & Fortran plus the use of Makefiles and compilers to test and run code in parallel computing environments.

Princeton University

Algorithms, Part 1

2012

Application of Java to algorithm design for sorting, searching and data storage.

Skills/Experience

Some of the technologies I have had significant experience using:

Frontend: Javascript | HTML5 | CSS3 | SASS/PostCSS | Gulp/Webpack/Parcel | React | Redux | Mocha/Jest

Backend: Python | NodeJS | PHP | Go | NGINX/Apache | API design | REST | GraphQL

Data Science: PyTorch | Tensorflow | Scikit-learn | Pandas | Jupyter | D3.js | Matplotlib/Seaborn/Altair

Databases/Caching/Messaging: MySQL | Postgres | MongoDB | Redis | RabbitMQ | Elasticsearch

Cloud computing: AWS | Google cloud

Other tools/technologies: GIT | Docker | Ubuntu | Linux | Command line | OS X | Raspberry Pi | Arduino | LaTeX

Publications & conferences

Briggs, C., Fan, Z., Andras, P. (2021) Federated Learning for Short-term Residential Energy Demand Forecasting (submitted for review in IEEE Transactions on Smart Grid). Available at: <https://arxiv.org/abs/2105.13325>

Briggs, C., Fan, Z., Andras, P. (2021) A Review of Privacy Preserving Federated Learning for the Internet-of-Things. *Federated Learning Systems: Towards Next Generation AI in Springer's Series on Studies in Computational Intelligence* Available at: <https://www.springer.com/gp/book/9783030706036> and <https://arxiv.org/abs/2004.11794>

Briggs, C., Fan, Z., Andras, P. (2020) Privacy Preserving Demand Forecasting to Encourage Consumer Acceptance of Smart Energy Meters. *Tackling Climate Change with Machine Learning workshop at NeurIPS 2020*. Available at: <https://www.climatechange.ai/papers/neurips2020/78> and <https://arxiv.org/abs/2012.07449>

Briggs, C., Fan, Z., Andras, P. (2020) *Federated Learning with Hierarchical Clustering of Local Updates to Improve Training on Non-IID Data. Proceedings of 2020 International Joint Conference on Neural Networks (IJCNN)* Available at: <https://ieeexplore.ieee.org/document/9207469> and <https://arxiv.org/abs/2004.11791>

de Quincey, E., Briggs, C., Kyriacou, T. & Waller R. (2019) Student Centred Design of a Learning Analytics System *Proceedings of the 9th International Conference on Learning Analytics and Knowledge (LAK '19)* Available at: <https://dl.acm.org/citation.cfm?doid=3303772.3303793>

de Quincey, E., Briggs, C. & Mitchell, J. (2018) Co-designing, Developing and Integrating a Student Facing Learning Analytics Systems. *16th Academic Practice and Technology Conference*.

Available at: <https://showtime.gre.ac.uk/index.php/ecommerce/apt2018/paper/viewPaper/1291>

de Quincey, E. & Briggs, C (2018) Learner Centred Design of Learning Analytics. *QAA Good practice case study*

Available at:

<https://community.qaa.ac.uk/s/article/Case-Study-Student-Engagement-Keele-University-Learner-Centred-Design-of-Learning-Analytics>

Briggs, S.J., Cage, A.G. & Briggs, C., (2017). How Do UK Environmental Publishers Use Facebook to Engage Users with Sustainability? *Meliora: International Journal of Student Sustainability Research*. 1(1)

Available at: <https://meliora.soton.ac.uk/articles/10.22493/Meliora.1.1.0002/>

Volunteer positions

OpenMined

2020

Lead Organiser, OpenMined Privacy Conference 2020

Led a team of volunteers to organise a virtual privacy technology focused conference for the open-source community: OpenMined - 60+ high profile speakers, 2500+ attendees.

pricon.openmined.org

Keele University School of Computing & Mathematics

2018 - 2020

School Sustainability Representative

Acted as the point of contact for sustainability issues within the school. In this role I worked to enable the university's sustainability goals at the local school level.