JONATHAN CARLTON

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RESEARCH INTERESTS

My research interests focus on understanding users through their interactions with online systems by building predictive models of their behaviour, for example, engagement and abandonment. I have created and evaluated user behaviour models from large logs of data, collected from live systems and controlled user studies, providing insight for content creators. During my PhD, I have also developed a keen interest in recommender systems and how interaction data can be used in the modelling process, assessing user satisfaction, and understanding the system's effectiveness.

SKILLS

Python (Primary) & Java (Secondary), SQL & NoSQL (MySQL + PostgreSQL + MongoDB), Data Analysis (Pandas + NumPy + SciPy), Data Visualisation (Matplotlib + Seaborn), Machine Learning (Scikit-Learn + Tensorflow (Keras)), Software Engineering, Quantitative User Research

EDUCATION

University of Manchester (BBC R&D Sponsored), PhD, Computer Science
Manchester, UK │ September 2017 – September 2021 (expected) │ Weekdays are mixed between BBC R&D and University of Manchester

Theme: Investigating how user interactions can be modelled to understand the users online and broadcast media experience.

Current Work: Exploring large logs of interaction data to discover predictive features of engagement and abandonment from multiple, nationally released online media experiences.

Application: 1) To have a positive impact on the user's experience while consuming BBC content; 2) To inform the content creators through data-driven recommendations; 3) To provide the BBC with an in-depth picture of the user's experience through understandable metrics.

ACM Summer School on Recommender Systems
University of Gothenburg, Sweden │ September 2019

Newcastle University, Master of Computing, Computer Science
Newcastle, UK │ 1st class │ September 2013 – July 2017

EXPERIENCE

Lead Teaching Assistant & Teaching Assistant
University of Manchester, School of Computer Science │ January 2018 – Present

Lead Teaching Assistant: Data Engineering (PG) and Java 1 (UG); responsible for two teams of teaching assistants, modernised the assignment component for Data Engineering, and nominated 'Best Graduate TA' by students while in this role.

Graded assignments and assisted in the following taught units: Foundations of Machine Learning (PG), Machine Learning & Optimisation (UG), Data Engineering (PG), Java 1 & 2 (UG), Chip Multiprocessors (UG), and Modern Information Engineering (PG)

Research Assistant
Newcastle University, School of Computer Science │ May 2017 – July 2017

The project automated a social network to provide ground truth metrics to evaluating a user ranking algorithm developed in my Master's project. The work was part of a collaboration between Newcastle University and Pontifical Catholic University of Rio de Janeiro.

RESEARCH ACTIVITIES

Peer-Reviewed Publications

- **Carlton, J.**, Brown, A., Jay, C., Keane, J. Using Interaction Data to Predict Engagement with Adaptive Media. *Under review: ACM Multimedia 2021*
- Nohrer. L., **Carlton, J.**, Jay, C. Machine Learning and Museum Collections: A Data Curation Conundrum. *International Conference on Emerging Technologies and the Digital Transformation of Museums and Heritage Sites* (RISE IMET), Springer, 2021
- **Carlton, J.**, Brown, A., Jay, C., Keane, J. Inferring User Engagement from Interaction Data. *Extended Abstracts of the 2019 CHI Conference on Human Factors in Computing Systems*. ACM, 2019.
- **Carlton, J.**, Woodcock J., Brown, A., Jay, C., Keane, J. Identifying Latent Indicators of Technical Difficulties from Interaction Data. *ACM SIGKDD Workshop on Data Science, Journalism, and Media* (DSJM 2018), ACM, 2018.
- **Carlton, J.**, Brown, A., Keane, J., Jay, C. Using Low-Level Interaction Data to Explore User Behaviour in Interactive-Media Experiences. *11th International Conference on Methods and Techniques in Behavioural Research*.
- Missier, P., McClean, C., **Carlton, J.**, et. al. Recruiting from the Network: Discovering Twitter Users Who Can Help Combat Zika Epidemics. *17th International Conference on Web Engineering (ICWE 2017)*. Springer, Cham.

Projects

Recommender Systems in Museums and Galleries (September 2020 – Present)

The project aims to create a personalised curations of museum content, collaborating with a fellow PhD student, with data sourced from partner institutions: Manchester and Whitworth Art galleries and the Smithsonian.

The work involves: building an autoencoder and using natural language processing techniques to extract features from artwork and associated metadata; building a content-based recommendation model; a web system to serve a personalised exhibition and collect evaluation metrics; carrying out a study to test its effectiveness.

Academic Activities

Reviewer: WWW 2020; CHI 2021 + 2020 + 2019; ICWE 2017 │ Volunteer: RecSys 2020; ICML 2020; SIGIR 2019; TVX 2019
Supervision: BBC R&D Intern on Data Visualisation for Interaction Data (co-supervisor, three months)

INTERESTS

An avid Star Wars fan - attended the Celebration Europe event (2016) and due to attend Celebration 2022 in Anaheim, California. A keen runner - challenging myself to run a half-marathon in 2021. Music-lover - regularly go to live music events and enjoy seeing my favourite bands whenever they tour.