Daniel Whettam

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Interactive AI PhD student at The University of Bristol. I'm interested in machine learning and computer vision, particularly in regards to multi-modal applications. I have research experience in multiple areas of machine learning and deep learning and depth of knowledge in a range of related disciplines including machine learning, deep learning, computer vision and natural language processing. I'm a highly motivated individual who loves to learn and engage with new ideas, and participate within the wider machine learning community.

Education

Academic Qualifications

- **The University of Bristol**
  PhD - CDT in Interactive Artificial Intelligence — *2019–Present*
- **The University of Edinburgh**
  MSc Data Science , Merit — *2018–2019*
- **The University of Hull**
  BSc (Hons) Computer Science , 1st class — *2015–2018*
- **Poynton Sixth Form College**
  A Levels , Computing, Maths, Psychology — *2013–2015*

Research Projects

- **PhD Summer Project (Ongoing)** *'The Blind Camera: Perception of Object Interaction Events from Audio Sensors'*

  Supervisors: Dima Damen, Vangelis Kazakos I am researching how to perform egocentric action recognition entirely from audio signals, in the context of the home-kitchen setting[1]. Recent work[2] has demonstrated the importance of audio in a multi-modal approach for egocentric action recognition. This work is investigating the efficacy of audio alone, with the aim of demonstrating that audio sensors provide very rich and informative data, highlighting the perception that audio sensors are more private than cameras is a myth. This project should lead into a complete PhD project on integrating audio with video.

- **MSc Dissertation** *'Finding the Right Teacher for a Difficult Student'*

  Supervisors: Amos Storkey, Elliot J. Crowley Investigated the use of Neural Architecture Search models for network distillation, where a smaller *student network* approximates the learnt representation of a larger *teacher network*. Developed a novel approach to creating a teacher network for distillation using Fisher information to scale up a NAS model. Involved extensive implementation in PyTorch.

- **BSc Dissertation** *'Data Mining Over Cancer Data with Decision Support Tool'*

  Supervisor: Darryl Davis I researched the use of clinical decision support systems for cancer diagnosis, ultimately developing a decision support tool to assist in bowel cancer diagnosis. This involved substantial data pre-processing, tackling issues of class imbalance and missing data. I engaged with literature regarding clinical decision support systems and the applications of machine learning in a clinical setting.

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https://epic-kitchens.github.io/2020
https://ekazakos.github.io/TBN/

Professional Experience

Research Experience

- **Research Assistant** — **Sci-Tech Daresbury**
  STFC Hartree Centre — *June 2018–August 2018*

  Researched applications of transfer learning for deep end-to-end speech recognition systems for use in assisted living environments. Used transfer learning to train RNN's to recognise regional UK dialects. Engaged with relevant literature to learn and understand transfer learning approaches to speech recognition. Applied understanding to a new setting, creating an effective speech recognition system for the Liverpudlian dialect. Presented results to Hartree Centre academics and Data Scientists. Our work from this project has been accepted for presentation at the 2019 Interspeech workshop on Pluricentric Languages in Speech Technology.

Teaching Experience

- **Laboratory Demonstrator** — **Hull**
  University of Hull — *Sept 2016–July 2018*

  Engaged with students and academics during labs, assisting students with lab work and assignments. Demonstrated for a range of modules including: Artificial Intelligence (Prolog), Advanced Programming (C++), Networking and User Interface Design (C#), Programming 1 (C#).

Publications

Workshop Presentations and Abstracts

Whettam D., Gargett A., and Dethlefs N.: Cross-dialect speech processing *Satellite Workshop at Interspeech 2019: Pluricentric Languages in Speech Technology*

Invited Talks

- **Finding the Right Teacher for a Difficult Student**
  Apple, Cheltenham, UK — *February 2020*
  An invited talk on my MSc dissertation with particular focus on how network distillation techniques may be applicable to the small scale neural networks used by the Hey Siri team.
- **Cross-dialect speech processing**
  Interspeech 2019, Graz, Austria — *September 2019*
  A talk presenting my work on cross-dialect speech processing at the Interspeech 2019 workshop on Pluricentric Languages in Speech Technology. This work was a result of my research internship at the Hartree Centre.

Conference Attendance and Community Involvement

- **International Conference on Acoustics, Speech, and Signal Processing (ICASSP 2020)**
  Barcelona, Spain (Remote attendance due to COVID-19) — *May 2020*
- **Interactive Artificial Intelligence Winter School**
  The University of Bristol, UK — *February 2020*
- **Interspeech 2019 - Pluricentric Languages in Speech Technology Workshop**
  Graz, Austria — *September 2019*
- **Deep Learning Winter School**
  The University of Hull, UK — *January 2018*

Technical skills

- **Programming Languages/Packages/Frameworks:** Python, PyTorch, NumPy, C++, C#, TensorFlow, Hadoop MapReduce, Keras, SKLearn, Pandas, Stan, Matlab, TeX, Prolog, C, SQL.