Danielle Saunders

Education

10/16-present **PhD, Information Engineering, University of Cambridge**

Thesis: *Domain Adaptation for Neural Machine Translation*, supervisor Bill Byrne
Thesis submitted 11/20, awaiting viva.
Neural machine translation systems perform poorly without relevant translation examples. My thesis explores adapting translation systems to data of interest, covering unknown domain and multi-domain translation, constrained language generation, and gender bias in translation.

10/12-06/16 **MEng (1st), Information & Computer Engineering, University of Cambridge**
Final project: *Improving Keyword Spotting for Low Resource Languages*, supervisor Mark Gales
Locating words and phrases in transcribed speech, with focus on rare keyword identification.
Studied modules including machine learning, statistical pattern processing, software engineering, speech & language processing, computer vision.

Employment

10/19-present **Research scientist, SDL plc, Cambridge**
Part-time until 01/21, then full-time.
Researching and implementing advances in machine translation. Working on combining translation models across language pairs, sub-character representations for logographic languages.

03/18-06/18 **Research intern, SDL plc, Cambridge**
Researched and implemented recent advances in machine translation. Worked on multi-domain and fine-tuning schemes for machine translation.

07/16-09/16 **Research intern, Apple, Cambridge**
Project on dialog modelling working in Siri group, using Tensorflow machine learning library.

07/15-08/15 **Software engineering intern (sponsored), Frazer-Nash Consultancy, Dorking**
07/14-08/14 Developed programs to model and simulate engineering designs in Matlab.

07/13-08/13 **Software engineering intern, Metaswitch, London**
Extended existing codebase with an object-oriented call server synchronisation tool using Java.

Selected publications

Author on 13 papers. Presented the following 8 papers as first author at international conferences and workshops on natural language processing, and also presented some at events aimed at non-technical audiences.
Full listing on Google Scholar: `https://scholar.google.com/citations?user=mBl92d8AAAAJ`

D Saunders, B Byrne, *Reducing Gender Bias in Neural Machine Translation as a Domain Adaptation Problem*, ACL 2020.
D Saunders, F Stahlberg, B Byrne, *Using Context in Neural Machine Translation Training Objectives*, ACL 2020.
D Saunders, R Sallis, B Byrne, *Neural Machine Translation Doesn't Translate Gender Coreference Right Unless You Make It*, GeBNLP 2020

D Saunders, W Feely, B Byrne, *Inference-Only Sub-Character Decomposition Improves Translation of Unseen Logographic Characters*, WAT 2020.
D Saunders, B Byrne, *Addressing Exposure Bias With Document Minimum Risk Training: Cambridge at the WMT20 Biomedical Translation Task*, WMT 2020.
D Saunders, F Stahlberg, B Byrne, *UCAM Biomedical Translation at WMT19: Transfer Learning Multi-Domain Ensembles*, WMT 2019.
D Saunders, F Stahlberg, A De Gispert, B Byrne, *Domain Adaptive Inference for Neural Machine Translation*, ACL 2019.
D Saunders, F Stahlberg, A De Gispert, B Byrne, *Multi-Representation Ensembles and Delayed SGD Updates Improve Syntax-Based NMT*, ACL 2018.

Computing tools

Languages: Extensive experience with Python, prior experience with Java, C++, Matlab
Frameworks & libraries: Tensorflow, Tensor2Tensor, spaCy, Moses machine translation toolkit, OpenFST
Operating systems: Experience using Windows, Linux, MacOS

Professional activities

Reviewing: Reviewed papers for EMNLP-IJCNLP 2020 (listed as outstanding reviewer), EACL 2021.
Teaching: Supervisor for the Cambridge University information engineering course for three years 2016-2018. Taught small groups of 2nd year undergraduates, covering systems and control, signal processing and communications.