Danielle Saunders

Education

10/16-02/21 **PhD, Information Engineering, University of Cambridge**
Thesis: *Domain Adaptation for Neural Machine Translation*, supervisor Bill Byrne
Thesis defended Feb 2021
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.
Course modules included machine learning, statistical pattern processing, software engineering, speech & language processing, computer vision.

Employment

10/19-present **Research scientist, RWS LanguageWeaver (formerly SDL plc), Cambridge**
Part-time until 01/21, then full-time.
Researching and implementing advances in machine translation. Developing terminology handling, combining translation models across language pairs, improving translation systems.

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

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 16 published papers including two journal articles, of which first author on 10. Multiple articles presented at international conferences and workshops.
Full listing on Google Scholar: `https://scholar.google.com/citations?user=mBl92d8AAAAJ`

D Saunders, *Domain adaptation and multi-domain adaptation for neural machine translation: A survey*, Journal of Artificial Intelligence Research 2022
D Saunders, R Sallis, B Byrne, *First the worst: Finding better gender translations during beam search*, Findings of ACL 2022
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.
F Stahlberg, **D Saunders**, B Byrne, *CUED@ WMT19: EWC&LMs*, WMT 2019
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

Program committees: Reviewer for EMNLP-IJCNLP 20 (outstanding reviewer), EACL 21, ACL 21, EMNLP 2021, ACL Rolling Review 09/21 monthly to present.
Invited talks: Goethe-Institut Artificially Correct hackathon (Oct 21) (link); Cambridge University NLIP seminar series (May 2020) (link)
Teaching: Supervisor for the Cambridge University 2nd year undergraduate information engineering course for three years 2016-2018. Small-group teaching: systems and control, signal processing and communications.