

FLORIAN L. KREYSSIG

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EDUCATION

University of Cambridge Cambridge, UK

PhD in Information Engineering Oct 2018 - present

Supervisor: *Prof. Phil Woodland*

- Mainly developing active and semi-supervised learning methods for speech recognition.
- Also developed an SSL method for speaker verification, a supervised clustering method for speaker diarisation and contributed to research on distributed training of neural networks.

University of Cambridge Cambridge, UK

MEng & BA in Information and Computer Engineering, with distinction Oct 2014 - June 2018

- Specialised in Machine Learning and Digital Signal Processing
- Ranked Top 10% in the year

Braunschweig University of Technology Braunschweig, Germany

BSc. Electrical Engineering, 1.0, (not finished, parallel to high school) Nov 2013 - Feb 2014

- One module - Fundamentals of Electrical Engineering

Wilhelm-Gymnasium Braunschweig, Germany

Abitur, 1.0 (best grade possible) Nov 2012 - July 2014

Elwood College Melbourne, Australia

Exchange Student July 2011 - Nov 2012

RESEARCH, WORK AND LEADERSHIP EXPERIENCE

Dialogue Systems Group, University of Cambridge Cambridge, UK

Master's Research Student Oct 2017 - June 2018

Supervisor: *Prof. Milica Gašić*

- Worked on user simulation for training task-oriented dialogue systems.
- Proposed and implemented a neural-network based user simulator (see SIGDIAL '18)
- Collaborated on work for reinforcement learning for dialogue management and VAEs for natural language generation.
- Received the best presentation award for my master thesis presentation.

Speech Group, University of Cambridge Cambridge, UK

Research Intern Summer 2016 & Summer 2017

Supervisor: *Prof. Phil Woodland*

- Proposed and investigated novel neural network acoustic models for speech recognition (see ICASSP '18).

- Contributed to the HTK speech recognition toolkit. Added RNN capability including Long Short-Term Memory (LSTM) units and Gated Recurrent Units (GRU) written in C and CUDA/C. Added further Deep Learning capabilities, such as attention and ResNets. Developed python scripts for the training of ASR systems using HTK (see ICASSP '19).

IAV Automotive Engineering

Gifhorn, Germany

Software/Electronic Engineering Intern

July 2015 – Sept 2015

- Autonomised the configuration and measurement system of Temperature-, Pressure- and Lambda-Sensors using a microprocessor. Programmed in C.

Cambridge Union

Cambridge, UK

Head of Audio-Visual, Deputy Convenor

July 2015 – Dec 2015

- Head of Audio-Visual: Maintained/upgraded the technical equipment of the university's largest student society. Managed a team of stewards when running the debates and speaker events.
- Deputy Convenor: Organized the Cambridge IV, one of the world's most prestigious debating championships. Oversaw a 5-figure budget, a three day event with over 450 people and a large team of assistants.

Myself

Design, Production and Sale of High-End Rubik's Cubes

2011 – 2014

- My 5x5x5 cubes were used by the 2011 World Champion, 2013 World- and Vice-world champion as well as for multiple world records.

McDonalds

Melbourne, Australia

Crew Member

Dec 2011 – Nov 2012

AWARDS

- Best Student Paper Award at SLT 2021
- EPSRC Doctoral Training Partnership (full PhD Scholarship)
- Best 4th-Year Project Presentation Award
- G-Research 3rd-Year Computer-based Project Prize
- Scholarship of the German National Academic Foundation (2014-2018)
- Emmanuel College Senior Scholarship (2016, 2017) and Bachelor Scholarship (2018-2021)
- State-level champion of the German Federal Math Competition (2013)
- State-level champion of "JugendForscht" in Chemistry (2008)
- Abitur-Award of both the German Mathematical and the German Physics Association (2014)

PROFESSIONAL ACTIVITIES

- Teaching: Undergraduate supervisor for 3F3 Statistical Signal Processing '19/'20/'21 and 3F8 Inference '19/'20/'21 (over 100 hours of teaching in total); Master's student assistant supervisor working on diarisation and second order optimisation projects.
- Reviewer: IEEE Journal of Selected Topics in Signal Processing '19, ICASSP '20/'21/'22; ASRU '21; ACL '18/'22; NAACL '22
- Organiser of the Cambridge CUED Division-F Conference 2020

PUBLICATIONS

Google Scholar page: <https://scholar.google.co.uk/citations?user=z4eollkAAAAJ>.

- B. Tseng, Y. Dai, **F.L. Kreyszig**, B. Byrne, “Transferable Dialogue Systems and User Simulators”, ACL, Bangkok, 2021.
- A. Haider*, C. Zhang*, **F.L. Kreyszig**, and P.C. Woodland “A Distributed Optimisation Framework Combining Natural Gradient with Hessian-Free for Discriminative Sequence Training”, Neural Networks, 2021. *Indicates first authors
- Q. Li*, **F.L. Kreyszig***, C. Zhang, P.C. Woodland, “Discriminative Neural Clustering for Speaker Diarisation”, SLT, Shenzhen, 2021. *Indicates first authors, (**Best Student Paper**)
- **F.L. Kreyszig**, and P.C. Woodland, “Cosine-Distance Virtual Adversarial Training for Semi-Supervised Speaker-Discriminative Acoustic Embeddings”, Interspeech, Shanghai, 2020.
- C. Zhang, **F.L. Kreyszig**, Q. Li and P.C. Woodland, “PyHTK: Python Library and ASR Pipelines for HTK”, ICASSP, Brighton, 2019.
- **F.L. Kreyszig**, I. Casanueva, P. Budzianowski and M. Gašić, “Neural User Simulation for Corpus-based Policy Optimisation of Spoken Dialogue Systems”, SIGDIAL, Melbourne, 2018.
- B. Tseng, **F.L. Kreyszig**, P. Budzianowski, I. Casanueva, Y. Wu, S. Ultes and M. Gašić, “Variational Cross-domain Natural Language Generation for Spoken Dialogue Systems”, SIGDIAL, Melbourne, 2018.
- I. Casanueva, P. Budzianowski, **F.L. Kreyszig**, S. Ultes, B. Tseng, Y. Wu and M. Gašić, “Feudal Dialogue Management with Jointly Learned Feature Extractors”, SIGDIAL, Melbourne, 2018.
- **F.L. Kreyszig**, C. Zhang, and P.C. Woodland, “Improved TDNNs using Deep Kernels and Frequency Dependent Grid-RNNs”, ICASSP, Calgary, 2018.
- **F.L. Kreyszig**, C. Zhang, and P.C. Woodland, “Modular construction of complex deep learning architectures in HTK”, UK Speech, Cambridge, 2017.
- Q. Li, C. Zhang, **F.L. Kreyszig**, P.C. Woodland, “Experimental studies on teacher-student training of deep neural network acoustic models”, UK Speech, Cambridge, 2017.

SKILLS

Programming Languages	Python, C, CUDA/C
Software Frameworks	HTK, Pytorch, NumPy
Specialisation	Speech Recognition, Deep Learning, Diarisation
Languages	German (C2), English (C2), Mandarin (B1/ HSK5)