JIANBO DAI

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EDUCATION

The University of Edinburgh, UK Sep. 2019 - Present
MSc in Artificial Intelligence
Relevant Courses: Machine Learning and Pattern Recognition, Accelerated Natural Language Processing, Deep Learning, Probabilistic Modelling and Reasoning, Natural Language Understanding, Generation, and Machine Translation, Algorithmic Game Theory and Applications, Programming Skills

The University of Manchester, UK Sep. 2017 - Jun. 2019
BEng in Chemical Engineering, GPA: 3.82/4.00 (75.9/100), Ranking: About top 10% students out of 302 students
Relevant Courses: Numerical Methods for Differential Equations, Discrete Mathematics, Process Control, Process Optimization

Dalian University of Technology, China Sep. 2015 - Jun. 2019
BEng in Chemical Engineering, GPA: 3.83/4.00 (88.3/100), Ranking: Top 3% students out of 219 students
Relevant Courses: Advanced Mathematics I and II, C language programming, Probability and Statics, Linear Algebra, Fundamentals of Computers, Electrical Engineering, Electronic Engineering
Selected Honors: National 8^{th} of Chinese College Student Chem-E-Car Competition in 2017; 1^{st} Prize of China's National Undergraduate Math Contest in Dalian in 2016; 3^{rd} Prize in International Mathematical Modeling Competition in 2017; Outstanding Graduates of DLUT in 2019

TECHNICAL SKILLS

Computer Languages	Fluent in Python, C, LaTeX; Have experience in HTML, SQL, C++, Qt
Framework	Fluent in Pytorch, Numpy, Matplotlib, SciPy
Language	Chinese (native), English (professional), French (beginner)

PROJECT

Trigram Language Model over Characters Sep. 2019 - Oct. 2019
NLP Course Projects *UoE*

- Built a trigram language model by collecting counts for character 3-grams and estimating probabilities with smoothing methods such as add-one and add-α.
- Used the model to generate random sentences and to calculate documents' perplexity for language identification task.
- The optimal model is utilized to investigate influence of the genre and size of the training data.

Classification of Images of Handwritten Digits and Letters Oct. 2019 - Nov. 2019
Deep Learning Course Projects *UoE*

- Used multi-layer neural network and different architectures and settings to classify images.
- Implemented ReLU activation function and its variants to explore their influence theoretically and experimentally.
- Implemented convolutional neural network with ResNet and batch normalization to enhance the model performance.
- Further improved the generalization performance of the network by using data augmentation and weight decay.

Exploring distributional similarity in Twitter Nov. 2019
NLP Course Projects *UoE*

- Implemented various vector semantic models to represent words, including basic PPMI and its variants with Laplace smoothing and context distribution smoothing. Investigate different similarity measures such as cosine similarity and Jaccard similarity methods.
- Used data from Twitter to compute relatedness of country names and found that it tends to be higher when they are geographically closer except for when news cause considerable relations between countries.

Neural Machine Translation Feb. 2020 - Mar. 2020
NLU+ Course Projects *UoE*

- Trained baseline neural machine translation models based on bi-LSTM encoder-decoder architecture, implemented beam search and added layers to enhance model's performance on different datasets by calculating loss, perplexity and BLEU score.
- Implemented the lexcial attention to improve the model as described in paper and investigate its influence by outputting attention heat maps.
- Analysed a basic implementation of the Transformer architecture and implemented the multi-head attention mechanism according to papers.