# Yuchen Niu

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## EDUCATION

**Msc in Advanced Computing (Grade: Merit)**, *Imperial College, London*                          2021 — 2022
*Thesis: Data Augmentation in Infinitely Wide Neural Networks*
**BSc (Hons) Artificial Intelligence and Computer Science (Grade: First Class)**, *The University of Edinburgh*   2017 — 2021
*Thesis: Performance Characterization of Serverless Computing*

## PROFESSION EXPERIENCE

**Research Assistant**                                                                           07 2020 — 09 2021
*Supervised by Prof. Yue Zhang, Text Intelligence Lab, Westlake University*                        *Hangzhou, China*
- Explored different generalization techniques on the SPRING AMR parser and attempted to improve the performance of the parser. Acknowledged in the paper "Cross-domain Generalization for AMR Parsing" at EMNLP 2022.
- Re-produced the performance of several AMR parsers. Evaluate models on out-of-domain test set.
- Explored cycle consistency of bilingual lexical induction.
- Participated in the annotation of DialogSum, a dialogue summarization dataset. Extracted discussions from Chinese online forums. Conducted linguistic analysis and an annotation manuscript.

**Software Engineer Internship**                                                                 07 2019 — 08 2019
*Thundersoft*                                                                                     *Beijing, China*
- Studied Git, Linux architecture and Android during a two-week training programme.
- Designed a Piano application on Android with teammates. Achieved communication between the application and device drivers. Studied foundations of Android.

## PROJECTS

**Data Augmentation in Infinitely Wide Neural Networks**                                          04 2022 — 09 2022
*Supervised by Dr. Mark van der Wilk, Master Degree Project, Imperial College London*             *London, UK*
- Developed sparse Gaussian process regression for infinitely wide neural networks.
- Improved generalisation by learning data invariances using summation over orbits.

**Calibrating Uncertainty Estimates for ML Models**                                              01 2022 — 04 2022
*Supervised by Dr. Yingzhen Li, Independent Study Option Project, Imperial College London*         *London, UK*
- Literature reviews about probabilistic forecasting, uncertainty estimation and calibration.
- Re-implemented variations of Platt scaling and conformal predictions on classifiers and regressors, respectively.

**Raft Implementation in Elixir**                                                                01 2022 — 03 2022
*Distributed Algorithms Coursework, Imperial College London*                                      *London, UK*
- Implemented leader election, log consistency and leader change to achieve consensus between machines.

**Performance Characterization of Serverless Computing**                                         09 2020 — 04 2021
*Supervised by Dr. Boris Grot and Dr. Dmitrii Ustiugov, Undergraduate Degree Project, The University of Edinburgh*   *Edinburgh, UK*
- Designed an automated tool to characterise multitenant performance on serverless experimental framework (vHive). Collect PMU counters following TopDown methodology.
- Demonstrated on vHive tutorial at ASPLOS 2022 and inspired a following publication on ISCA 2022.

**Conditional Sequence to Sequence Paraphrasing**                                                01 2021 — 04 2021
*Machine Learning Practical Coursework, The University of Edinburgh*                               *Edinburgh, UK*
- Studied the effectiveness of length ratio conditioning on paraphrase generation with tagging and fine-tuning approaches.

**Detroit – Care House Assistive Robot**                                                         01 2020 — 04 2020
*System Design Project, The University of Edinburgh*                                               *Edinburgh, UK*
- Led the design and develop an Android application for interacting with the robot, and between clients.

## PUBLICATIONS

**Exploring Generalization Ability of Pretrained Language Models on Arithmetic and Logical Reasoning**
Cunxiang Wang, Boyuan Zheng, Yuchen Niu, Yue Zhang
*CCF International Conference on Natural Language Processing and Chinese Computing (NLPCC) 2021*

## SKILLS

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|---|---|
| **Programming Languages** | Python, Go, JAVA, Kotlin, C, C++, Haskell |
| **Tools** | Git, PyTorch, JAX, Transformers, LaTeX, MarkDown |