Ziyu (Neil) Xu

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Education

2021–? **PhD Statistics** *Carnegie Mellon University*. Pittsburgh, PA
Advised by Aaditya Ramdas

2019–2020 **MS Machine Learning** GPA: 4.0/4.3
Advised by David P. Woodruff, Justin Khim and Pradeep Ravikumar on various projects.

2015–2019 **BS Computer Science** GPA: 3.88/4.0

Publications

1. A unified framework for bandit multiple testing
Z. Xu, R. Wang, and A. Ramdas NeurIPS 2021

2. Dynamic algorithms for online multiple testing
Z. Xu and A. Ramdas Math. and Sci. ML 2021

3. Class-weighted classification: Trade-offs and robust approaches
Z. Xu, C. Dan, J. Khim, and P. Ravikumar ICML 2020

4. Strategy and policy learning for non-task-oriented conversational systems
Z. Yu, **Z. Xu**, A. W. Black, and A. Rudnicky SIGDIAL 2016

5. Chatbot evaluation and database expansion via crowdsourcing
Z. Yu, **Z. Xu**, A. W. Black, and A. Rudnicky RE-WOCHAT workshop of LREC 2016

Preprints

6. Multiclass classification via class-weighted nearest neighbors
J. Khim, **Z. Xu**, and S. Singh 2020

Projects

June 2020-Present **Multiple Testing**, *Carnegie Mellon University*.
I am developing methods with guaranteed false discovery control in the online multiple testing setting and the bandit setting [1, 2]. I am advised by Prof. Aaditya Ramdas.

Jan. 2020-Jan. 2021 **Memory Bounded Experts**, *Carnegie Mellon University*.
I proved theoretical bounds on space complexity in the streaming setting for the experts problem. I was advised by Prof. David P. Woodruff.

Jan. 2019-Sep. 2020 **Robust Classification**, *Carnegie Mellon University*.
I worked on theoretical understanding of weighted classification methods, and developing an algorithms robust to changes in class weighting. I was advised by Dr. Justin Khim and Prof. Pradeep Ravikumar in this area. Our work was accepted for publication at ICML 2020 [3].

Jan. 2018 - Aug. 2019 **Machine Translation**, *Carnegie Mellon University*.
I used **PyTorch** to train a neural constituency parser as a data augmentation technique for neural machine translation models. I also used **DyNet** to train neural seq2seq models for translating obfuscated code into human-readable code. I was advised by Prof. Graham Neubig.

Jan. 2016-Oct. 2016 **Dialog Agents**, *Carnegie Mellon University*.
I researched crowdsourcing strategies for gathering dialog data using Amazon Turk. I also contributed to building a dialog agent that was the first to use reinforcement learning in a non-task specific setting. I was advised by Prof. Zhou Yu and our work was published at SIGDIAL 2016 [4] and the RE-WOCHAT workshop at LREC 2016 [5].

Industry

May-Aug. 2018 **Science Intern**, *CTRL-labs (now part of Facebook Reality Labs)*, New York.
I developed state-of-the-art LSTM ensemble model that models hand movement from electromyography (EMG) signals in **TensorFlow**.
Built parser for constructing acyclic graph pipeline for preprocessing real time EMG signals.

May-Aug. 2017 **Software Engineering Intern**, *Bloomberg*, New York.
I worked on the Message Infrastructure team, where I imported RapidCheck, a Haskell QuickCheck inspired testing framework, into the Bloomberg **C++** environment.

May-Aug. 2016 **Software Engineering Intern**, *PicMonkey*, Seattle.
I helped build the user interface and photo editing features for the launch of the mobile photo editor app in both **Android** and **iOS**.

Talks

Nov. 2021 A unified framework for bandit multiple testing — *Waterloo Student Conference in Statistics, Actuarial Science and Finance*

Sep. 2021 Dynamic algorithms for online multiple testing — *Workshop on current and future trends in multiple hypothesis testing (MRC Cambridge)*

Teaching

36-650: Statistical Computing (Fall 2021)

15-251: Great Theoretical Ideas in Computer Science (Fall 2017, Spring 2018, Fall 2018)

15-150: Introduction to Functional Programming (Fall 2016, Spring 2017)

Service

2020 SCS Master's Advisory Committee — *Advises the Dean of the School of Computer Science on issues relating to the master's student body.*

2020 MLD Master's Admissions Committee