# 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. Memory bounds for the experts problem
V. Srinivas, D. P. Woodruff, **Z. Xu**, and S. Zhou STOC 2022

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

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

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

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

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

## Preprints

7. Post-selection inference for e-value based confidence intervals
**Z. Xu**, R. Wang, and A. Ramdas 2022

## 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 and Dr. Samson Zhou.

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

Mar. 2022 Post-selection inference for e-value based confidence intervals — *International Seminar on Selective Inference*

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