

# Zining Zhu

✉ zining@cs.toronto.edu

🐦 @zhuzining

🌐 <https://www.cs.toronto.edu/~zining>

## Education

---

- 2019 – present     **PhD student, University of Toronto** Computer Science.  
Advisor: Frank Rudzicz.
- 2014 – 2019     **BASc., University of Toronto** Engineering Science, Robotics Option.

## Employment History

---

- 2022     **Applied Scientist Intern**, Amazon Search, Palo Alto, California.
- 2019     **Research Intern**, Tencent Jarvis Lab, Shenzhen, Guangdong.
- 2017-2018     **Software Engineering Intern**, Winterlight Labs, Toronto, Ontario.
- 2017     **Software Engineering Intern**, TripAdvisor Inc., Needham, Massachusetts.
- 2016     **Research Assistant**, Dynamic Systems Lab, University of Toronto Institute of Aerospace Studies, Toronto, Ontario.

## Publications

---

### Refereed Conference and Workshop Proceedings

1. **Zhu Z**, Shahtalebi S, and Rudzicz F. Predicting fine-tuning performance with probing. *EMNLP*. 2022
2. **Zhu Z**, Shahtalebi S, and Rudzicz F. OOD-Probe: A Neural Explanation of Out-of-Domain Generalizations. *ICML SCIS Workshop*. 2022
3. Shahtalebi S, **Zhu Z**, and Rudzicz F. Out-of-Distribution Failure through the Lens of Labeling Mechanisms. *ICML SCIS Workshop*. 2022
4. **Zhu Z**, Wang J, Li B, and Rudzicz F. On the data requirements of probing. *Findings of ACL*. 2022
5. Li B, **Zhu Z**, Thomas G, Rudzicz F, and Xu Y. Neural reality of argument structure constructions. *ACL*. 2022
6. Ramezani A, **Zhu Z**, Rudzicz F, and Xu Y. An unsupervised framework for tracing textual sources of moral change. *Findings of EMNLP*. 2021
7. Li B, **Zhu Z**, Thomas G, Xu Y, and Rudzicz F. How is BERT surprised? Layerwise detection of linguistic anomalies. *ACL-IJCNLP*. 2021
8. **Zhu Z** and Rudzicz F. An information theoretic view on selecting linguistic probes. *EMNLP*. 2020
9. **Zhu Z**, Pan C, Abdalla M, and Rudzicz F. Examining the rhetorical capacities of neural language models. *EMNLP BlackboxNLP Workshop* 2020
10. **Zhu Z**, Novikova J, and Rudzicz F. Detecting cognitive impairments by agreeing on interpretations of linguistic features. *NAACL*. 2019
11. **Zhu Z**, Novikova J, and Rudzicz F. Deconfounding age effects with fair representation learning when assessing dementia. *IJCAI-PRICAI*. 2019
12. Hsu YT, **Zhu Z**, Wang CT, Fang SH, Rudzicz F, and Tsao Y. Robustness against the channel effect in pathological voice detection. *NeurIPS ML4H Workshop* 2018
13. **Zhu Z**, Novikova J, and Rudzicz F. Semi-supervised classification by reaching consensus among modalities. *NeurIPS IRASL Workshop* 2018

14. Li Q, Qian J, **Zhu Z**, Bao X, Helwa M, and Schoellig A. Deep neural networks for improved, impromptu trajectory tracking of quadrotors. *ICRA*. 2017

## Preprints

15. **Zhu Z**, Balagopalan A, Ghassemi M, and Rudzicz F. Quantifying the Task-Specific Information in Text-Based Classifications. 2021
16. **Zhu Z**, Li B, Xu Y, and Rudzicz F. What do writing features tell us about AI papers? 2021
17. **Zhu Z**, Xu Y, and Rudzicz F. Semantic coordinates analysis reveal language changes in AI research. 2020

## Teaching

---

### Instructor at University of Toronto

- CSC401 / 2511 Natural Language Computing (2023 winter)  
Co-instructing with En-Shiun Lee and Raeid Saqur
- CSC401 / 2511 Natural Language Computing (2022 winter)  
Co-instructing with Frank Rudzicz and Raeid Saqur

### Teaching Assistant at University of Toronto

- ECE1786 Creative Applications for NLP (course prep TA in 2022 summer and TA in 2022 fall)
- CSC2515 Introduction to Machine Learning (2021 fall)
- CSCC24 Principles of Programming Languages (2021 summer)
- CSC148 Introduction to Computer Science (2021 summer)
- CSC401/2511 Natural Language Computing (2021 winter)
- CSC309 Web Programming (2020 fall)
- CSC401/2511 Natural Language Computing (2020 winter)
- ECE324 Introduction to Machine Intelligence (2019 fall)
- CSC180 Introduction to Computer Programming (2016 fall)

### Seminars

- Interpretable NLP seminar at UofT CompLing (2021 winter)
- Introduction to ML seminar at UTADA (2017 fall)

### Advising

- Rohan Deepak Ajwani – 2022 – Summer research internship & ECE MEng project: Adversarial examples and fake news
- Philipp Eibl – 2021 – Undergraduate research project: Information estimators
- Esmat Sahak – 2021 – Undergraduate research project: Multitask learning and probing
- Chuer Pan – 2019 – Undergraduate research project: Examining the rhetorical capacities of neural language models

## Services

---

### Reviewing

- 2022: ACL Rolling Review, EMNLP, ICLR, NeurIPS, RobustSeq@NeurIPS, LT-EDI@ACL, CMCL@ACL
- 2021: ACL, EMNLP, NAACL, AAAI
- 2020: ACL, IEEE Journal of Biomedical and Health Informatics
- 2018: Computer Methods & Programs in Biomedicine

### Volunteering

- Toronto Graduate Application Assistance Program (2021, 2022)
- NSight Mentorship Program (2016)

## Selected Talks

---

- *Better interpretability and finer controls of DNN language models*, UT Computational Linguistics talk, Nov 15 (scheduled), 2022
- *Incorporating probing in the development of large language models*, Vector Institute Endless Summer School (ESS) invited talk, March 1, 2022

- *On the data requirements of probing*, Vector Institute Research Symposium, Virtual poster presentation, Feb 22, 2022
- *Predicting fine-tuning performance with probes*, UT Computational Linguistics, virtual presentation, Feb 15, 2022
- *Quantifying the task-specific information in text-based classifications*, UT Language Research Day, Virtual presentation, Nov 12, 2021
- *Probing neural language models*, AISC Recent Trends in NLP discussion, Video talk, Aug 15, 2021
- *Writing can predict AI papers acceptance, but not their impact*, Vector Institute Research Symposium, Virtual poster presentation, Feb 16, 2020
- *Improving the neural NLP model performances with linguistic probes*, Zhi-Yi NLP Open Course, Video talk, Nov 20, 2020
- *An information theoretic view on selecting linguistic probes*, TsingHua University AI TIME, Video talk, Oct 30, 2020
- *Examining the rhetorical capacities of neural language models*, Vector Institute NLP Symposium spotlight presentation, Video talk, Sep 16, 2020.
- *Efficient pre-training methods for language modeling*, Tencent Jarvis Lab, Shenzhen, China, Aug 5, 2019
- *Automatic assessment of cognitive impairments*, UTMIST tech talk, Toronto, Canada, Nov 20, 2018

## Awards

---

- Ontario Graduate Scholarship, Provincial, \$15,000. 2022-2023
- Vector Institute PhD Research Grant, Institutional, \$6000. 2021
- Vector Institute PhD Research Grant, Institutional, \$6000. 2020
- ICRA RAS Travel Grant, Institutional, \$500. 2017
- Engineering Science Research Opportunity Program (ESROP) fellowship, Departmental, \$3000. 2016
- Dean's List, Institutional. 2014-2019
- UofT Entrance Scholarship, Institutional, \$5000. 2014
- Chinese Physics Olympics (CPhO) Bronze medal, National. 2013

## Skills

---

Languages	(fluent) English, Chinese, (beginner) French
Coding	Python, R, Java, C++
Data	PyTorch, Jax, Tensorflow, scikit-learn, gensim, SpaCy, NLTK, pandas, matplotlib.
Web Dev	HTML, CSS, JavaScript, Flask, AWS.
Misc.	LaTeX, git