# Zining Zhu

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## Education

**University of Toronto**, PhD student in Computer Science 2019 – PRESENT
Advisor: Frank Rudzicz
Research interests: Interpretability, Human Languages Technology

**University of Toronto**, Bachelor in Engineering Science 2014-2019
Robotics Option
Sample courses: AI, Machine Learning, Operation Systems, Distributed Systems

## Publications

### Conferences, Workshops

[7] How is BERT surprised? Layerwise detection of linguistic anomalies
B. Li, **Z. Zhu**, G. Thomas, Y. Xu, F. Rudzicz
ACL 2021

[6] An information theoretic view on selecting linguistic probes
**Z. Zhu**, F. Rudzicz
EMNLP 2020

[5] Examining the rhetorical capacities of neural language models
**Z. Zhu**, C. Pan, M. Abdalla, F. Rudzicz
EMNLP 2020 BlackBoxNLP Workshop

[4] Detecting cognitive impairments by agreeing in interpretations of linguistic features
**Z. Zhu**, J. Novikova, F. Rudzicz
NAACL 2019

[3] Robustness against the channel effect in pathological voice detection
Y-T. Hsu, **Z. Zhu**, C-T. Wang, S-H. Fang, F. Rudzicz and Y. Tsao
NeurIPS ML4H Workshop 2018

[2] Semi-supervised classification by reaching consensus among modalities
**Z. Zhu**, J. Novikova, F. Rudzicz
NeurIPS IRASL Workshop 2018

[1] Deep neural networks for improved, impromptu trajectory tracking of quadrotors
Q. Li, J. Qian, **Z. Zhu**, X. Bao, M. K. Helwa, A. P. Schoellig
ICRA 2017

### Preprints and Others

[P2] Semantic coordinates analysis reveal language changes in AI research
**Z. Zhu**, Y. Xu, F. Rudzicz. arXiv 2011.00543

[P1] Deconfounding age effects with fair representation learning when assessing dementia
**Z. Zhu**, J. Novikova, F. Rudzicz. arXiv 1807.07217

## Press Coverage

TechXplore: A new machine learning model to isolate the effects of age in predicting dementia (July 27, 2018)

## Selected Talks

- *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

- 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

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## Work Experience

**Tencent Jarvis Lab**, Research Intern — Shenzhen, China. 2019

- Explainable language modeling and Transformer pre-training for translation.

**WinterLight Lab**, Research Software Engineer — Toronto, ON, Canada 2017 - 2018

- Supervised and semi-supervised assessment of cognitive impairments from multiple modalities.
- Published results at NeurIPS (IRASL workshop) [2] and NAACL [4].
- Deconfounding age from linguistic features [P1] was reported by TechXplore.

**TripAdvisor**, Software Engineer Intern — Needham, MA, US. 2017

- Android application with Java API for hotel booking.

**Dynamic Systems Lab**, Research Assistant — Toronto, ON, Canada. 2016

- Deep neural networks for improved drone trajectory control.
- Supported by ESROP fellowship and Professor Angela Schoellig at University of Toronto.
- Published results at ICRA [1].

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## Teaching

**University of Toronto**, as teaching assistant — Toronto, ON

- CSCC24 Principles of Programming Languages (2021 summer)
- CSC148 Introduction to Computer Science (2021 summer)
- CSC401/2511 Natural Language Computing (2020 winter, 2021 winter)
- CSC309 Web Programming (2020 fall)
- ECE324 Introduction to Machine Intelligence (2019 fall)
- CSC180 Introduction to Computer Programming (2016 fall)

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## Services

Reviewing for conferences and journals

- ACL (2020, 2021)
- NAACL (2021)
- EMNLP (2020)
- AAAI (2021)
- IEEE Journal of Biomedical and Health Informatics (2020)
- Computer Methods & Programs in Biomedicine (2018)

Organizing seminars

- Interpretable NLP seminar, 2021W
- Introduction to ML seminar with UTADA, 2017F

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