

Zhengzhong Liang

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EDUCATION

Doctor of Philosophy, Computer Science, 2018.08-
The University of Arizona, Tucson, AZ, USA
GPA: 3.92/4.0

Master of Science, Electrical and Computer Engineering, 2016.08-2018.08
The University of Arizona, Tucson, AZ, USA
GPA: 4.0/4.0

Bachelor of Engineering, Electrical Engineering and Automation, 2011.09-2015.06
Shandong University, Ji'nan, Shandong, China
GPA: 84.36/100

RESEARCH EXPERIENCE

Research Assistant 2018.08-Present
Computational Language Understanding Laboratory, The University of Arizona

- Explored the possibility to use the state-of-the-art neural methods (e.g., BERT) to detect the text containing causal relationships in biomedical research papers. [*Python, Pytorch*].
- Studied whether a state-of-the-art generative language model is able to learn to generate valid statements given two premise statements. [*Python, Pytorch*].
- Compared neural information retrieval method (BERT, USE-QA) and traditional method (tf-idf, BM25) for knowledge retrieval and proposed a hybrid method to combine them. [*Python, Pytorch*].
- Integrated an LSTM model into Reach (an information extraction software for biomedical publications) to detect the negation relationships in a biomedical event [*Scala, Dynet, Python*].
- Worked to ground the entities in natural language sentences to certain types in the knowledge base with no training data [*Scala*].

Research Assistant 2017.08-2018.08
Machine Learning and Data Analytics Laboratory, The University of Arizona

- Investigated the impact of poisoned training data to an LSTM language model [*Python, TensorFlow*].
- Composed a tutorial about how to use the High Performance Computing (HPC) center of University of Arizona.

Research Assistant 2017.01-2017.08
Laboratory for Information Processing Systems, The University of Arizona

- Investigated the impact of different encoding/decoding schemes and learning windows of Spike-Timing Dependent Plasticity (STDP) to a Spiking Neural Network (SNN) image classifier; Proposed a new weight normalization scheme for SNN [*Python*].

Research Participant 2017.01-2017.04
Computational and Experimental Neuroscience Laboratory, The University of Arizona.

- Learned the behavior of place cells in Hippocampus.

Laboratory of Advanced Protection Scheme for Power Grid, Shandong University

- Derived a theoretical model to calculate the fault current in a distribution power grid; Testified the theoretical model by software simulation [*MATLAB, PSCAD*].

PUBLICATIONS

In Submission

- Zhengzhong Liang and Mihai Surdeanu. “When to Use the Hammer: A Hybrid Method for Evidence Retrieval for Question Answering.” *Submitted to 2021 European Conference on Information Retrieval (ECIR 2021)*.

Published

- Zhengzhong Liang, Mihai Surdeanu. “Do Transformers Dream of Inference, or Can Pretrained Generative Models Learn Implicit Inferential Rules?” In *2020 EMNLP Workshop on Insights from Negative Results in NLP*.
- Enrique Noriega-Atala, Zhengzhong Liang, John Bachman, Clayton Morrison, and Mihai Surdeanu. “Understanding the Polarity of Events in the Biomedical Literature: Deep Learning vs. Linguistically-informed Methods.” In *NAACL Proceedings of the Workshop on Extracting Structured Knowledge from Scientific Publications*, pp. 21-30. 2019.
- Zhengzhong Liang, and Gregory Ditzler. “The Impact of an Adversary in a Language Model.” In 2018 *IEEE Symposium Series on Computational Intelligence (SSCI)*, pp. 658-665. *IEEE*, 2018.
- Zhengzhong Liang, David Schwartz, Gregory Ditzler, and O. Ozan Koyluoglu. “The impact of encoding-decoding schemes and weight normalization in spiking neural networks.” *Neural Networks 108 (2018): 365-378*.
- Jiashu Guo, Zhengzhong Liang, Gregory Ditzler, Nidhal C. Bouaynaya, Elizabeth Scribner, and Hassan M. Fathallah-Shaykh. “Nonlinear Brain Tumor Model Estimation with Long Short-Term Memory Neural Networks.” In 2018 *International Joint Conference on Neural Networks (IJCNN)*, pp. 1-8. *IEEE*, 2018.

TEACHING EXPERIENCE

Teaching Assistant, Linear Algebra (ECE310)

2016.08-2017.05

- Prepare and conduct lab sessions of MATLAB

Teaching Assistant, Digital Logic (ECE274)

2017.08-2017.12

- Help students debug FPGA program.

AWARDS AND HONOURS

Successful Participant, Mathematical Contest in Modeling.

2014.04

Third Prize, “Electrician Cup” National Undergraduate Mathematical Contest in Modelling.

2013.12

First Prize of Shandong Division, National Mathematical Contest in Modelling for Undergraduates.

2013.10

Scholarship, sponsored by AirTac Co., Ltd.

2013.10

Outstanding Volunteer of EE Department of Shandong University.

2012.12

Scholarship, sponsored by Changyuan Group Ltd.

2012.10