JAESEONG LEE

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PROFESSIONAL SUMMARY

Seeking a machine learning/artificial intelligence position to leverage my expertise in **Explainable AI, Natural Language Processing and Software Engineering**. Aiming to contribute to **developing and improving Large Langauage Model Reasoning Capability, Retrieval Augmented Generation systems and Neurosymbolic AI system for ML model debugging**.

SKILLS

Programming Languages: Python, Java, Javascript, C++, C#, Bash
Skills: Machine Learning, Explainable AI, Software Engineering, Software Testing, Algorithms
Tools: Git, Pytorch, Tensorflow, Keras, SpaCy, React, WALA, Soot
Databases: SQL, MySQL, MongoDB, Hadoop, Spark, PySpark

PROFESSIONAL EXPERIENCE

The University of Texas at Dallas, Richardson, TX Aug 2021 - Present
Graduate Research Assistant. Supervisor: Dr. Gopal Gupta and Dr. Shiyi Wei

· **Explainable AI Project**
- Estimating human-readible logical predicates from Convolutional Neural Network (CNN) features to explain model behavior.

· **Automatic Mathematic In-Context Example Generation for Large Language Model (LLM)**
- Designed an automated LLM in-contect prompting framework for math questions using context-aware mutation technique and optimizing inter- and intra-consistency of the LLM responses over modalities.

· **Automated Testing Linguistic Capability of NLP Models**
- Developed the first automated tool according to the linguistic capabilities, designing formal specification of linguistic capabilities in NLP applications.

The University of Texas at Austin, Austin, TX Aug 2018 - May 2021
Graduate Research Assistant. Supervisor: Dr. Milos Gligoric

· **Naturalness of Hardware Description Languages (HDL)**
- First studying repetitiveness and predictableness of HDLs: VHDL, Verilog and SystemVerilog.

· **ML-based Software Engineering Tools for Code Suggestion**
- Developed a generative Sequence-to-Sequence model from the large HDL dataset for code suggestion.

FaradayFuture, Los Angeles, CA May 2017 - Aug 2017
Algorithm Development Engineer intern, Advanced Driver Assistant System

· Participated and developed multi-sensor (Camera, Lidar, Radar and USS) based object detection algorithms.
· Built an algorithm module testing framework for autonomous parking system.

Spirent Communications, Frederick, MD June 2016 - Aug 2016
Engineering intern

· Tested PEVQ VQA algorithm for usage of chromatic software for video experience evaluation.
· Implemented VMAF video quality assessment algorithm into the chromatic video experience evaluation software.

Laboratory for Image and Video Engineering (LIVE Lab), Austin, TX Nov 2015 - Dec 2016
Graduate Research Assistant. Supervisor: Dr. Alan Bovik

· **Learning-based Video Scene Encoding and Decoding Scheme Using GAN-based Autoencoder**
- Developed a video compression model, encoding frame into edge-frame and decoding it using conditional GAN-based decoder.

· **Analyzed video BLIINDS, a video quality assessment algorithm, for developing a video archiving system**.

EDUCATION

Pursuing Ph.D. in Computer Science. Aug 2021 - Present
University of Texas at Dallas, Richardson TX
M.S. in Electrical and Computer Engineering. Aug 2014 - May 2017
University of Texas, Austin TX
B.S. in Electrical Engineering. Aug 2011 - May 2012
University of Texas at Dallas, Richardson TX

PUBLICATIONS

- **Jaeseong Lee**, Wei Yang Gopal Gupta and Shiyi Wei. Automatic Mathematic In-Context Example Generation for LLM Using Multi-Modal Consistency. In Proceedings of the 31st International Conference on Computational Linguistics (COLING 2025) (pp. 8908–8924). Association for Computational Linguistics.
- **Jaeseong Lee**, Simin Chen, Austin Mordahl, Cong Liu, Wei Yang and Shiyi Wei. Automated Testing Linguistic Capabilities of NLP Models. ACM Transactions on Software Engineering and Methodology, vol. 33, no. 7, 2024.
- **Jaeseong Lee**, Pengyu Nie, Junyi Jessy Li, and Milos Gligoric. On the naturalness of hardware descriptions. In Proceedings of the 28th ACM Joint Meeting on European Software Engineering Conference and Symposium on the Foundations of Software Engineering (ESEC/FSE 2020). pp. 530–542, 2020.
- Sungsoo Kim, Jin Soo Park, Christos Bampis, **Jaeseong Lee**, Mia Markey, Alexandros Dimakis, Alan Bovik. Adversarial Video Compression Guided by Soft Edge Detection. IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP 2020). pp. 2193-2197, 2020.
- Nimish Kale, **Jaeseong Lee**, Reza Lotfian, and Roozbeh Jafari. Impact of sensor misplacement on dynamic time warping based human activity recognition using wearable computers. In Proceedings of the conference on Wireless Health (WH '12). Article 7, pp. 1–8, 2012.