THINH ON

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EDUCATION

New Jersey Institute of Technology **May 2025 (expected)**
Ph.D. in Computer Science *Newark, NJ*

RELEVANT COURSEWORK

Data Structures, Algorithms Analysis, Deep Learning, Data Mining, Image Processing & Computer Vision, Deep Learning on Graphs, Computational Neuroscience, Big Data Analysis, Statistical Computing, Numerical Computing, Evolutionary Algorithms

EXPERIENCE

Nokia Bell Labs **June 2023 – August 2023**
AI Research Intern *Murray Hill, NJ*

- Developed autoencoder frameworks for image representation learning based on vision transformers (ViT) and CNN-based models (ResNet, DenseNet, VGG, etc.) using benchmark datasets: ImageNet, CIFAR100, CIFAR10.
- Achieved high accuracy on image classification using the autoencoders (95%), results are comparable to supervised learning (98%).
- Adapted variational autoencoder as data augmentation to improve object detection metrics (mIoU by 10%, precision by 5%) on video data using Faster-RCNN + ResNet.

New Jersey Institute of Technology **August 2021 – Present**
Research Assistant *Newark, NJ*

- Conduct research using large language models (LLMs): text-to-SQL and SQL-to-text translation, augmented multi-step reasoning using knowledge from databases, policy iteration in reinforcement learning using LLMs contextualization ability.
- Implemented state-of-the-art federated learning algorithms in TensorFlow and PyTorch, optimized GPU usage via gradient accumulation and checkpointing, accelerated training time using parallel TensorFlow graphs.
- Assisted in developing software written in Java to collect heart rate data, performed statistical modeling and visualization to study the collected data, preprocessed data for predictive modeling.

MT Højgaard **May 2018 – July 2019**
Software Developer & BIM Engineer *Ho Chi Minh City, Vietnam*

- Designed and implemented C++ modules and exported as plug-ins for BIM software. The plug-ins boosted the productivity of the entire company by 3 times by reducing time for making drawings from 3D models of buildings, bridges, etc.

PROJECTS

Enhancing Sequential Decision Making Ability of LLMs via Prompt Engineering | *Python, PyTorch, transformers, GPT 3.5, Falcon 7B*
Use prompt engineering to perform in-context policy iteration for a Markov Decision Process (MDP). After in-context learning, the LLMs are expected to capture the MDP and suggest trajectory that yields optimal long-term rewards. No gradient descent in this work.

Autoencoders for Image Classification | *Python, PyTorch, TensorFlow*
Implemented state-of-the-art vision transformers (ViT) and CNN-based models (ResNet, DenseNet, VGG, etc.), constructed autoencoders using these models as encoders and their flipped architectures as decoders. Trained autoencoders by reconstructing images plus Lasso/Bernoulli regularization and used trained model encoders for image classification.

Text-to-SQL using LLMs for Top-k Query Results | *Python, PyTorch, MySQL, transformers, GPT 3.5 Turbo*
Created a Python interface to link MySQL and GPT 3.5 Turbo model. GPT can access to external databases and write SQL statements to extract information. Fine-tuned GPT model to generate SQL statements that extract proportion information of database attribute(s) to find top-k results. Summarized proportion information as text prompts which trigger GPT to return top-k query results.

TECHNICAL SKILLS

- **Programming**: Python, C++, CUDA, R, Matlab, Scala, Spark, SQL
- **ML Tools/Frameworks**: TensorFlow (v1, v2), PyTorch, transformers, scikit-learn, openCV
- **Other tools**: Linux, Git, Docker, Tableau, Power BI

SELECTED PUBLICATIONS

- Thinh On, and others (2023). *Proportionate Diversification of Top-k LLM Results using Database Queries*. VLDB–LLMDB 2023.
- Xiaopeng Jiang*, Thinh On*, and others (2023). *Zone-based Federated Learning for Mobile Sensing Data*. IEEE PerCom 2023.

HONORS & AWARDS

- Silver medal in Applied Informatics in the Vietnamese Mechanics Olympiad for Undergraduates (2018).
- Gold medal (2015), Silver medal (2014) in the Vietnamese Physics Olympiad for Undergraduates.
- Gold medal in the Vietnamese Chemistry Olympiad for Undergraduates (2014).