NGUYEN MINH DUC

ducnm@postech.ac.kr Duc M. Nguyen kurone02

Education

Pohang University of Science and Technology (POSTECH), Republic of Korea **Feb 2025 – present**
Master of Science in ***Artificial Intelligence***

Ulsan National Institute of Science and Technology, Republic of Korea **Sep 2020 – Aug 2024**
Bachelor of Science in ***Computer Science and Engineering****, Minor in* ***Industrial Engineering*** *GPA:* ***4.02/4.3***
Summa Cum Laude, Salutatorian. Recipient of UNIST Global Dream Scholarship that covers full tuition and living expenses.

Thesis: *Automated Math Reasoning: Solving Optimization Problems with Open Source Large Language Model (GitHub link)*

Coursework: Software Engineering, Operating System, Computer Network, Artificial Intelligence, Deep Learning, Natural Language Processing, Computer Vision, Financial Engineering, Algorithmic Trading, Time Series Analysis, etc..

Experience

Human-AI Interaction and Visualization Lab **Jun 2022 – Aug 2024**
Undergraduate Research Intern, supervised by Professor Sungahn Ko *Ulsan, Republic of Korea*

- Led and published a research paper on automated mathematical reasoning with open-source Large Language Models.
- Analyzed state-of-the-art prompt engineering techniques for automated mathematical reasoning.
- Proposed and implemented a novel automated program repair algorithm that improves LLM's performance by 10%.
- Optimized the rendering time of the system's front-end by more than 50%, ensuring a smooth user experience.
- Implemented the low-resource utilization data collection mechanism on mobile phone, improving users' experience.
- Designed and implemented the system's database for efficient data retrieval capable of handling hundreds of requests.
- Streamlined the data downloading process, boosting the loading time by more than 20%.

Ulsan National Institute of Science and Technology **Mar 2022 – Present**
Teaching Assistant *Ulsan, Republic of Korea*

- Courses: *Introduction to AI Programming I, II*; *Discrete Mathematics*; *Calculus I*; and *Information Visualization*
- Responsible for answering questions, and grading students' assignments/exams for more than 100 students per course.

Publication

1. Joohee Kim, Hyunwook Lee, **Duc M. Nguyen**, Minjeong Shin, Bum Chul Kwon, Sungahn Ko, and Niklas Elmqvist. "DG Comics: Semi-Automatically Authoring Graph Comics for Dynamic Graphs". In *Proceedings of the IEEE Visualization Conference (IEEE VIS), 2024.*

2. **Duc M. Nguyen**, and Sungahn Ko. "Solving Optimization Problems with Open Source Large Language Model". In *AI4Math Workshop at the International Conference on Machine Learning (ICML), 2024.*

Open Source Contribution

AI4Finance-Foundation/FinRL **GitHub link**
Contributor *10.7k+ stars*

- Refactored the legacy code base to be compatible with the current dependencies' requirements.
- Fixed major bugs that prevented the deployment of the Deep Reinforcement Learning Agent to trading platforms, potentially affecting thousands of users.

Projects

Portfolio Optimization | *Pytorch, FinRL, Algorithmic Trading GitHub* **Sep – Nov 2023**

- Finalist at S&P Global-KAIST-UNIST-Kyung Hee University Quant Investment Model Competition.
- Lead researcher for developing Deep Reinforcement Learning models using PyTorch and FinRL.
- Proposed a novel Actor-Critic network based on multiple 1-dimensional Convolution Neural Networks.
- Deep Reinforcement Learning outperforms classical methods by more than 8 folds in terms of Sharpe Ratio.

UNISTAGRAM | *Spring Boot, React, WebSocket, MongoDB GitHub* **Mar – Jun 2023**

- A centralized platform for thousands of UNIST students to communicate and connect freely and easily.
- Back-end leader that is responsible for more than 70% of the back-end implementation.
- Designed database schema and optimized query time by 25%, ensuring a smooth user experience.
- Assisted 40% workload in front-end development, mainly optimized states, and hooks, which boosts 30% loading time

Technical Skills

Languages: C/C++, Python, Typescript/Javascript, Bash Script, Kotlin, Dart, PHP, Scala, Matlab, Ruby, LaTeX
Database: MongoDB, SQLite, MySQL
Front-end Frameworks: React, NextJs, Flutter
Back-end Frameworks: FastAPI, Flask, ExpressJs, Django
Deep Learning Frameworks: Pytorch, Tensorflow, HuggingfaceTransformers