

EDUCATION

Hanoi University of Civil Engineering (HUCE)

Bachelor of Computer Science Engineering. GPA: 3.8/4.0 - 8.9/10.0

Hanoi, Vietnam

Sep 2019 - Aug 2023 (Expected)

TECHNICAL SKILLS

- **Programming Languages:** Python, Java, C#.NET, PHP, Assembly
- **Libraries:** NumPy, Pandas, TensorFlow, Keras, Scikit-learn, Matplotlib, NLTK, OpenCV, Flask
- **Frameworks/ Platforms:** : Lavarel, ASP.NET MVC, WEB API, ReactNative, JQuery, Bootstrap.
- **Tools:** Jupyter, Kaggle, Git, MongoDB, Microsoft SQL server

WORKING EXPERIENCES

Hanoi University of Civil Engineering, Department of Computer Science

Hanoi, Vietnam

Research Assistant

Feb 2022 - Present

- **SDN Inter-domains network application for a heterogeneous and distribute SDN network**
 - Built an east-west interface to ensure data consistency between many heterogeneous SDN controllers.
 - Applied the quorum-based replication mechanism using Q-Learning algorithm to guarantee an acceptable level of consistency while maintaining good network performance metrics (read delay, write delay and responding time)
 - After the 1500s, version staleness achieved convergent mean values of 0.4, 0.11, and 0.3 for three read threshold's cases 10ms, 30ms, and 50ms, respectively, and lower than 0.5 (fixed version staleness threshold).
- **LSTM-based approach for server and route selection in inter-SDN domains**
 - Proposed LSTM-based link cost prediction for the server and route selection mechanism in distributed and heterogeneous SDN network to learn characteristics of non-linear nature and uncertainty of traffic flows including network state dataset with over 2.7 million of traffic data.
 - Achieved $1.8 * 10^{-5}$ MSE, and executed 15x faster than traditional centralized ML.
 - With 15% higher of link utilization, 10% lower of packet loss and servers' response time faster than benchmarks.
- **Transformer-based machine translation preference with a bilingual Chatbot**
 - Proposed transformer algorithm in machine translation with collected data and preprocessed datasets such as removing HTML tags, stop words, word separation, word embedding with over 120 thousand of sentences.
 - Achieved 19.1 BLEU score, followed by Seq2Seq with attention (16.4) and Seq2seq (4.3), and executed 2x faster than others methods.
 - Built and deployed an online bilingual chatbot with Flask and TensorFlow, allowing users to ask questions in English or Vietnamese, responded in the appropriate language.
- **Facial Emotion Recognition of students using deep neural networks**
 - Applied data augmentation, image resizing, median filter techniques to FER2013 dataset (35 887 samples)
 - Implemented and evaluated different classifiers: Baseline, Five-Layer, ResNet50, IRCNN-SVM and CNN-LSTM, reached 83.04% prediction accuracy.

Teaching Assistant

Feb 2022 - Aug 2022

- **Machine learning:** Taught concepts and guided classes of 39 students to analyze and preprocess dataset before designing and evaluating the model.
- **Introduction To Programming:** Collaborated with instructors and 5 other teaching assistants to lead recitations grade coursework, and answer 60 students' questions.

PUBLICATIONS

- Nam-Thang Hoang, **Cong-Son Duong**, Tran-Le-Tuan Nguyen, Van Tong, and Hai Anh Tran. "Knowledge-defined Heterogeneous Network: Use-case of QoS-based Server and Route Selection in Large-scale Network." *Association for Computing Machinery*, 2022
- Nam-Thang Hoang, **Cong-Son Duong**, Tran-Le-Tuan Nguyen, Van Tong, and Hai Anh Tran. "LSTM-based approach for server and route selection in inter-SDN domains" *Journal of Computer Science and Cybernetics*, 2022

HONORS AND AWARDS

- **CSC Award** 1 in 10 excellent students selected Hanoi University of Civil Engineering 2022
- **Do Quoc Sam scholarship award** 1 in 20 students with the highest GPA 2022
- **1st Prize in Scientific Research Competition for HUCE Students** 2021
- **Best Poster Award** Association for Computing Machinery 2022

PASTIMES AND ACTIVITIES

- I am a members of X50 academic club. I have participated in a number of activities such as: Tutoring general subjects for about 150 students in the university, and organizing the club's annual events
- In my free time, I also work on some pet projects. They can be found at my online CV "duongcongsonCV.com" and my GitHub profile "github.com/CongSon01"