Huyen M. Le

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Research Interests

My research interests lie at the intersection of artificial intelligence and biomedical imaging, with a focus on developing quantitative imaging techniques that integrate computational and biological principles. My goal is to develop models that enhance our understanding of biological systems and advance healthcare solutions.

Education

University of Illinois in Urbana-Champaign *Fall 2025 - now (expected graduation: 2027)*
M.S in Electrical & Computer Engineering Illinois, U.S.

- **Advisor:** Professor Stephen A. Boppart
- **Research Topic:** Computational Optics

VinUniversity *Fall 2024 - now (expected graduation: 2029)*
Ph.D. in Computer Science Hanoi, Vietnam

- **Advisors:** Dr. Hieu Pham, Dr. Mai Tran
- **Research Topic:** AI in Biomedical Imaging

Yonsei University *2019 - 2023*
B.Eng in Applied Information Engineering Seoul, South Korea

- **Grade:** 3.64/4.0
- **Capstone Advisor:** Assoc Prof. Uh, Youngjung

Experience

VinUni-Illinois Smart Health Center *February 2024 - now*
PhD Student & Graduate Research Assistant Hanoi, Vietnam

- Research Project: Evaluating the Effect of Antiviral Drugs using Polarized Light Imaging and Machine Learning Approaches: The Case of Human-induced Pluripotent Stem Cell-derived Cardiomyocytes (hiPSC-CMs).
- Work Done: Developed a deep learning framework to quantify the sarcomere structural organization in fluorescently-tagged hiPSC-CMs single-cell images, using open-source dataset from Allen Institute for Cell Science.
- Work in Progress: Data collection in collaboration with Vinmec Hi-Tech Center to develop hiPSC-CMs datasets, including one healthy cell line and two hypertrophic cardiomyopathy (HCM) cell lines.

Biophotonics Imaging Laboratory, UIUC *August 2025 - present*
Graduate Student Illinois, US

- Research Project: Computational Optics

Multiscale Biomedical Engineering Laboratory, Seoul National University *June 2025 - July 2025*
Visiting Student, Advisor: Professor Jeon Noo Li Seoul, South Korea

- Research Project: Virtual Staining of in-vitro angiogenesis using Diffusion Model.

SmallMachines Inc. / Corporation R&D Center *January 2023 - January 2024*
Data Analyst, Mentor: Dr. You, Jungmin Seoul, South Korea

- Sepsis Prediction: Developed a binary classification model to distinguish between healthy and sepsis patients using tabular data from 30 routine tests in the Complete Blood Count (CBC) test. The model achieved an accuracy of 0.92 and an AUC score of 0.95.
- Septic Shock Prediction: Developed a multimodal classification model to predict the time of septic shock onset in patients at high risk of sepsis.
- Web Development: Developed web-based platforms using React JS, Flask, Firebase, and Google Cloud to deploy the trained Machine Learning models.
- Mobile App Development: Built a mobile app which can get real-time ECG data from a measured device and suggest music for users based on stress level calculated from Heart Rate Variability metrics.

Publications and Patents

C=Conference, J=Journal, P=Patent, S=In Submission, T=Thesis

[C.1] **H. Le**, K. Dang, N. Nguyen, M. Tran and H. Pham, "D-SarcNet: A Dual-stream Deep Learning Framework for Automatic Analysis of Sarcomere Structures in Fluorescently Labeled hiPSC-CMs," 2024 IEEE International Conference on Bioinformatics and Biomedicine (BIBM), Lisbon, Portugal, 2024, pp. 3378-3383, doi: 10.1109/BIBM62325.2024.10822719.

[C.2] **H. Le**, K. Dang, T. Lai, N. Nguyen, M. Tran and H. Pham, "SarcNet: A Novel AI-Based Framework to Automatically Analyze and Score Sarcomere Organizations in Fluorescently Tagged HIPSC-CMS," 2025 IEEE 22nd International Symposium on Biomedical Imaging (ISBI), Houston, TX, USA, 2025, pp. 1-5, doi: 10.1109/ISBI60581.2025.10981011.

[P.1] Choi Jun Kyu, You Jung Min, **Le Minh Huyen**, Lee Ju Hun (Registration Date: 2023.12.14). Sepsis early diagnosis and prognosis prediction system and the method thereof. Korean Intellectual Property Office (KIPO). Pending.

Presentations (Oral & Poster)

- **[Oral Presentation] Le, H.**, Dang, K., Lai, T., Nguyen, N., Tran, M., & Pham, H. (2024), A Novel AI-based Framework to Automatically Analyze and Score Sarcomere Organizations in Fluorescently Tagged hiPSC-CMs. In *the 10th International Conference in Vietnam on the Development of Biomedical Engineering (BME10)*.

Academic Activities

Teaching Assistant

- **[Spring 2025]** COMP1020 - Object Oriented Programming and Data Structure @ VinUniversity: *Tutor students with Java Programming during lab sections, grade quizzes, and assist students with projects (enrollment: 62 students).*
- **[Fall 2024]** COMP3040 - Computer Vision @ VinUniversity: *Tutor students during office hours and lab sections, grade quizzes, exams and homework assignments (enrollment: 32 students).*

Reviewer

- 13th International Symposium on Information and Communication Technology (SOICT 2024)

Trainee

- **[Fall 2024]** Laboratory Biosafety courses @ Vinmec Hi-Tech Center

Organizer

- **[Summer 2024]** VinUni-Illinois Smart Health Center Pre-PhD Summer School 2024

Course-related/Collaborative Projects

- **[Fall 2024 - present]** Angiogenesis Virtual Staining @ MBEL Lab, Seoul National University
- **[Fall 2024]** Predicting Drug Response in Cancer Treatment using Multi-omics Data @ VinUniversity
- **[Spring 2023]** South Korea's Low Fertility Rate Research @ Yonsei University
- **[Fall 2022]** Kpop Songs Recommendation System @ Yonsei Data Science Academia [Link]
- **[Fall 2022]** Facebook UI-UX Redesign @ Yonsei University [Link]

Honors and Awards

IEEE BIBM 2024 Student Travel Award *November 2024*
IEEE International Conference on Bioinformatics and Biomedicine

GLC Distinction Award *Spring 2022, Spring 2023*
Yonsei University [🌐]

- Dean's Award for achieving best performance in the following courses: Statistics, Logical Thinking with Computer Programming, Social Network Analysis.

2022-1 Honors Award *Spring 2022*
Yonsei University

- President's Award for achieving a GPA within the top 10% of students.

Undergraduate Merit-based Scholarship *Spring 2019*
Yonsei University

- Undergraduate Merit-based Scholarship for freshmen students based on admission evaluation results, which covers 100% of tuition fees for 04 years.

Skills

- **Programming Languages:** Python, R, SQL
- **Web Technologies:** JavaScript, ReactJS, React Native, Flask, Firebase, Google Cloud
- **ML/AI:** Pytorch, OpenCV, Scikit-learn, TensorFlow
- **Languages:** Vietnamese (Native speaker), English (IELTS 7.5, *date 17/5/2024*), Korean (TOPIK 5)

References

Hieu Pham, Ph.D.
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Mai Tran, Ph.D.
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Uh, Youngjung, Ph.D.
Associate Professor, Department of Artificial Intelligence
Yonsei University, South Korea
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