

# Huyen M. Le

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## RESEARCH INTERESTS

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My research interests lie at the intersection of Computer Science and Bioengineering, focusing on integrating computational and biological principles to analyze biomedical data. My goal is to develop models that enhance our understanding of biological systems and advance healthcare solutions.

## EDUCATION

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**VinUniversity** 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 (QS Ranking #56)** 2019 - 2023  
*B.Eng in Applied Information Engineering* Seoul, South Korea

- **Grade:** 3.64/4.0
- **Capstone Advisor:** Dr. Uh, Youngjung
- **Coursework:** Information Programming I & II, Applied Data Structure, Applied Algorithms, Database Management System, Information Software Engineering, Data Analysis, Advanced Data Analysis, Mathematics for Artificial Intelligence, Natural Language Analysis, Social Network Analysis.

## EXPERIENCE

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**VinUni-Illinois Smart Health Center, VinUniversity** February 2024 - now  
*PhD Candidate & 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).
- **Current result:** Two papers C.1 and S.1
- **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 fluorescence and polarized light datasets, including one healthy cell line and two hypertrophic cardiomyopathy (HCM) cell lines.

**SmallMachines Inc. / Corporation R&D Center** January 2023 - January 2024  
*Software Engineering, 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 (12 hours, 24 hours, 48 hours, 96 hours). The model utilized 30 CBC test routines, time-series vital signs, and clinical notes as input; resulted in an accuracy of 0.75 and an AUC score of 0.7.
- **MCI Early Detection:** Developed a machine learning model for early detection of Mild Cognitive Impairment (MCI) in elderly people, using p-tau, t-tau,  $A\beta_{42}$ ,  $A\beta_{40}$  biomarkers in blood plasma, measured by the company's immunoassay analyzer. The accuracy was 0.72.
- **Web Development:** Developed web-based platforms using React JS, Flask, Firebase, and Google Cloud to deploy the trained Machine Learning models, making the models accessible.
- **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] **Le, H.**, Dang, K., Nguyen, N., Tran, M., & Pham, H. (2024), D-SarcNet: A Dual-stream Deep Learning Framework for Automatic Analysis of Sarcomere Structures in Fluorescently Labeled hiPSC-CMs. In *2024 IEEE International Conference on Bioinformatics and Biomedicine (BIBM)*. [arxiv](#)
- [S.1] **Le, H.**, Dang, K., Lai, T., Nguyen, N., Tran, M., & Pham, H. (2024). SarcNet: A Novel AI-based Framework to Automatically Analyze and Score Sarcomere Organizations in Fluorescently Tagged hiPSC-CMs. Manuscript submitted at *2025 IEEE International Symposium on Biomedical Imaging*. [arxiv](#)
- [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

- [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

### School Projects

- [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

### GLC Distinction Award

Yonsei University

Spring 2022, Spring 2023



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

### 2022-1 Honors Award

Yonsei University

Spring 2022

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

### Undergraduate Merit-based Scholarship

Yonsei University

Spring 2019

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

## SKILLS

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- **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

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### **Hieu Pham, Ph.D.**

Assistant Professor, College of Engineering & Computer Science (CECS)

Scientific Director, Entrepreneurship Lab (E-lab)

VinUniversity, Vietnam

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### **Mai Tran, Ph.D.**

Assistant Professor, College of Engineering & Computer Science (CECS)

VinUniversity, Vietnam

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### **Uh, Youngjung, Ph.D.**

Associate Professor, Department of Artificial Intelligence

Yonsei University, South Korea

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