

Quy Phuong Le

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🎓 [Google Scholar](#) | [in LinkedIn](#) | [Github](#) | [Personal Website](#)

Education

Pukyong National University

Mar 2024 – Feb 2026

MS Degree in Industry 4.0 Convergence Bionics Engineering (Full time)

Busan, Republic of Korea

- **GPA:** 4.17/4.5
- **Thesis Topic:** Edge Computing Approach for Golf Club Path Recognition using Self-Supervised Learning

Ho Chi Minh City University of Technology

Aug 2019 – Nov 2023

BS Degree (Honors) in Mechatronic Engineering (Full time)

Ho Chi Minh, Vietnam

- **GPA:** 8.22/10
- **Thesis topic:** Damage detection of steel beam using CycleGAN

Research Experience

Research Assistant

Mar 2024 – Present

NanoBioMechanics Laboratory (NBMLab) [Website](#)

Busan, Republic of Korea

During my time at NBM Lab, I developed an IoT system integrated with AI for smart devices to support healthcare applications. I designed and implemented real-time data acquisition pipelines for motion analysis. My research focuses on using machine learning models for biomedical signals collected from sensors.

1. Non-contact Sensor Vital Signs Monitoring System

[Link](#)

- Developed a non-contact monitoring system using flexible sensors to track heart rate and respiratory rate.
- Integrated AI models to predict vital signs and detect anomalies for early health assessment.
- Designed a cloud-connected system with a mobile application for remote health monitoring and real-time data visualization.

2. Smart Device with Sensors Fusion for Vital Signs Monitoring

[Link](#)

- Developed a smart chair integrating multiple sensors (PPG, BCG, ECG) to monitor physiological signals continuously.
- Implemented sensor fusion algorithms to enhance accuracy in heart rate and respiration measurement.
- Designed an AI-assisted system for health status detection and anomaly identification in real time.

3. Smart Golf Swing Analyzer System

[Link](#)

- Wearable device development includes: smart gloves, smart belts, smart shoes
- Integrated system connecting AIoT, cloud to improve skills in golf swing
- System analysis software design, mobile app

4. Wireless sensor network

[Link](#)

- Developed a wireless sensor network to collect and process data from multiple sensor nodes.
- Designed a system to reconstruct body movements based on real-time sensor data.
- Implemented data synchronization and optimized communication protocols for accurate motion analysis.

Research Assistant

Oct 2020 – Jan 2024

UID Lab [Website](#)

Ho Chi Minh, Vietnam

At UID Lab, I worked on hands-on projects in Machine Learning and Artificial Intelligence. I explored embedded systems and robotics to integrate software and hardware for biomedical signals. In addition, I conducted research in Computer Vision, Machine Learning algorithms, and Deep Learning architectures to design and implement neural network modules.

1. PPG Signal and Application in the Medical

[Link](#) 

- Research and design embedded systems and PCB for PPG signal measurement using the heart rate sensor
- Developing software to retrieve sensor data from the device to the computer
- Developing and programming the device's microcontroller with real-time operating system (RTOS) and Bluetooth Low Energy (BLE) capabilities for signal acquisition and transmission.

2. Study on Damage Detection of Steel Beam Using AI

- Utilizing vibration data through signal processing, for anomaly detection in steel beams.
- Develop and deploy using the CycleGAN architecture.
- Vibration data is encoded to lower dimension and three-sigma rule to detect and visualize damage.

Publications

Truong Tien Vo*, **Quy Phuong Le***, Huynwoo Jung*, et al. (2025). **Multi-Sensor Smart Glove With Unsupervised Learning Model for Real-Time Wrist Motion Analysis in Golf Swing Biomechanics**. *IEEE Internet of Things Journal*, 12(11), pp. 16574–16586. DOI: 10.1109/JIOT.2025.3532630. (Co-First).

Quy Phuong Le, Truong Tien Vo, Dogeon Ha, et al. (2025). **On-Chip Machine Learning For In-home Patient Monitoring Using Non-Contact Ballistocardiogram-Based Bed Sensor**. Manuscript is in revision for publication in *IEEE Internet of Things Journal*.

Truong Tien Vo*, **Quy Phuong Le***, Trong Nhan Nguyen, et al. (2025). **Multi-Task Non-Contact Ballistocardiogram Based Vital Signs Monitoring in Acupuncture**. Manuscript is in revision for publication in *Computers in Biology and Medicine*. (Co-First)

Quy Phuong Le, Dogeon Ha, Huynwoo Jung, et al. (2025). **On-Device Club Path Recognition with Self-Supervised Learning for Golf Analysis**. Manuscript submitted for publication in *IEEE Sensors Journal*.

Dogeon Ha, **Quy Phuong Le**, Truong Tien Vo, et al. (2025). **Golf Swing Measurement with Real-Time Sweet Spot Detection using High-Speed Vision and Deep Neural Network**. Manuscript is in revision for publication in *Measurement Science and Technology*.

Thanh Tung Luu, Duc Thien An Nguyen, **Quy Phuong Le**, et al. (2024). **Fatigue Damage Quantification for Structural Health Monitoring of Steel Beam Using CycleGAN**. *Journal of Engineering Science and Technology*, 19(2), pp. 705–724.

Technical Ability

Languages: C/C++, C#, Python, Matlab

Machine Learning Frame Work: PyTorch, TensorFlow

Model Deployment & Optimization: Quantization, ONNX, TFLite, TensorRT, Edge AI

Tools: Docker, Git, CUDA, TensorBoard

Application Development: Mobile Applications (iOS, Android), WinForm

Embedded Systems: MCU, PCB Design, Analog Front End, Low-Power Design, RTOS

IoT & Cloud Integration: Firebase, Azure, MQTT, TCP/IP, UDP

Languages

English: Duolingo English Test (DET) - 110, CEFR B2

Vietnamese: Native

Awards

2025 PKNU Fire Grant

2025 Brain Korea BLUE Scholarship Award

References

Professor Junghwan Oh

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Assistant Professor Sudip Mondal

Institute of Information Technology and Convergence, Pukyong National University, Republic of Korea.

Email: smondal@pknu.ac.kr

Assistant Professor Jae Sung Ahn

Smart Gym-Based Translational Research Center for Active Senior's Healthcare, Pukyong National University, Busan 48513, Republic of Korea.

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