

Cuong Q. Pham

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PROFESSIONAL INTERESTS

I have a strong interest in data-driven healthcare research integrating signal processing and machine learning.

Current Research Focus: Digital phenotyping, AI for mental health, multimodal biosignal analysis, biomedical signal processing, and development of Software as a Medical Device (SaMD).

EDUCATION

University of Illinois Urbana-Champaign (UIUC) <i>M.S. in Electrical and Computer Engineering</i>	United States 2026 – now
Ritsumeikan University <i>M.E. in Advanced Information Science and Engineering</i>	Japan 2021 – 2023
VNU-HCM University of Technology <i>B.E. in Physics Engineering</i>	Vietnam 2015 – 2020

WORK EXPERIENCE

Department of Electrical and Computer Engineering, UIUC <i>Graduate Student</i>	IL, USA Aug 2026 – now
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- **Project:** “LittleBeats”. **Funding(s):** NIH. **My Role:** Research Assistant
 - * **Collaboration: PI(s):** Prof. Nancy McElwain (ILSD, UIUC), Prof. Mark Hasegawa-Johnson (ECE, UIUC), Prof. Bashima Islam (ECE, WPI)
 - * **Responsibilities:** Analyzed biosignal data collected from infants and developed machine learning models to characterize infant physiological patterns.

VNU HCMIU x VinUniversity <i>Tech-lead</i>	Vietnam Oct 2025 – Jul 2026
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- **Project:** “Neuroplasticity Tracking During Intervention For Depression and Anxiety: A Longitudinal, Cognitive-guided Digital Phenotyping Study”. **Funding:** IBRO/Wellcome. **My Role:** Lead Proposal Writing & Project Execution.
 - * **Collaboration:** VinUniversity, HCMIU, RMIT VN, Nguyen Tri Phuong Hospital, Phuong Nam Hospital.
 - * **Responsibilities:** Led the development of a mobile digital CBT platform and conducted a longitudinal study (n=60, 4.5 months) on Vietnamese mental health patients to investigate neuroplasticity changes. [[Link](#)]

School of Computer Science, University of Birmingham <i>Visiting Research Student (Mentor: Dr. Melanie Jouaiti)</i>	Birmingham, UK Jul – Sep 2025
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- **Project:** “Bayesian Comorbidity-aware Modeling For Interpretable Speech Features Based Depression Severity Detection”. **Funding:** IEEE SPS. **My Role:** Lead Proposal Writing & Project Execution.
 - * **Responsibilities:** Developed and evaluated an interpretable, comorbidity-aware disentangled learning framework to model links between speech features and depression severity.

VinUni-Illinois Smart Health Center, VinUniversity <i>Graduate Student (Supervisor: Dr. Hieu Pham)</i>	Hanoi, Vietnam Aug 2024 – Jul 2026
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- **Project:** “Towards Improving Longitudinal Digital Phenotyping Representation Framework for Wellbeing Modeling”. **Funder:** VISHC. **Duration:** Dec 2024 - Jul 2025. **My Role:** Project Execution
 - * **Responsibilities:** Developed and evaluated a novel framework for unified digital phenotype data formulation to improve various longitudinal well-being modeling tasks.

- **Project:** “Developing and Implementing Digital Mental Health Assessment Tools in Low-Resource Settings”. **Funder:** VISHC. **Duration:** Apr - Dec 2025. **My Role:** Tech-lead, Project Coordinator
 - * **Collaboration:** VinUniversity, VNU HCMIU, RMIT Vietnam, Nguyen Tri Phuong Hospital, Menthly Clinics.
 - * **Responsibilities:** Developed a mobile application for multimodal digital phenotype acquisition, integrating physiological signals, behavioral indicators, and psychological self-reports; conducted short-term data collection with Vietnamese mental health patients (n=100, 15 days).

School of Biomedical Engineering, VNU HCMIU

Research Assistant (Advisor: Dr. Huong Ha)

HCMC, Vietnam

Nov 2023 – Jul 2024

- **Project:** “Investigation on establishing a large database of EEG and video recordings of Vietnamese people in application for intelligent control and primary motor rehabilitation in epileptic patients”. **Funding:** Vietnam Ministry of Science and Technology (KC-4.0-07/19-25). **My Role:** Tech Lead @ HCMIU Team
 - * **Collaboration:** VNU HCMIU, VNU UET, EMOTIV, 175 Military Hospital.
 - * **Responsibilities:** (1) tailored Motor Imagery experiment and processing pipelines to Vietnamese subjects, benchmark predictive modelings, deployed web apps for neuro-feedback; (2) developed app for data acquisition and real-time mouse control system, integrating into cross-regional project platform.
 - * **Outcomes:** 02 conference talks (BME10, NeuroCoB '24), 01 patent, 01 journal

HATO Medical Technologies ApS

Biosignal Researcher

Odense, Denmark

Jun 2022 – Nov 2023

- Job responsibilities
 - * **Cardiology Research:** (1) worked closely with cardiologists to establish standardized CVDs labeling outcomes tailored to specific use cases at a local Danish ED; (2) conduct literature reviews for evidence-based decision making on cardiology practice, prepare technical materials and grant proposals/fundings.
 - * **Data Pipeline:** (1) collect, preprocess clinical data from public and closed sources; (2) worked closely with software developers to integrate serialization pipeline into the backend architecture of the in-house product.
 - * **AI/ML Development:** (1) implement a Cloud-based internal data management system with interactive web app and tested its streamline workflow; (2) evaluate and deployed time-series predictive modeling for abnormalities detection and interpretation; inspected and ensured the solution meet technical requirements.

Biological Engineering Laboratory, Ritsumeikan University

Graduate Research Assistant (Advisor: Dr. Kashiwara Koji)

Shiga, Japan

Oct 2021 – Aug 2023

- **Project:** “A Hybrid Controller for Multiple Drug Infusion in Heart Failure”. **Duration:** Sep 2021 - Mar 2022
 - * **Responsibilities:** (1) develop a hybrid controller to regulate CO and MAP within during drug infusion using ML model with drug inputs; (2) evaluate on a mathematical modeling responses of dogs with heart-failure dataset.
 - * **Outcomes:** 01 conference paper.
- **Project:** “Remote Photoplethysmograph Assessment Using Deep Learning”. **Duration:** Apr 2022 - Aug 2023
 - * **Responsibilities:** (1) design framework to extract high-quality forehead rPPG signal via autoencoder networks; (2) conduct rPPG dataset on Japanese students (n=7) and evaluate HR on different camera configurations; (3) design framework to assess stiffness-based waveform feature via deep 3D CNN.
 - * **Outcomes:** M.E. Thesis

GTOPIA Vietnam. Ltd

Signal Processing Engineer

HCMC, Vietnam

Jan – Jun 2020

- Job responsibilities
 - * **Wearable Research:** (1) design pipeline for raw data aggregation and hemodynamic signal processing for in-house wearable product; (2) conduct experiments on wristbands’s performance under different usage scenarios.
 - * **EHR Data Collection:** (1) collaborate with Ho-Chi-Minh-Heart-Institute for large-scale clinical data acquisition; (2) categorize and digitalize health records of administered patients with cardiovascular diseases

Biomedical Electronics Laboratory, Shibaura Institute of Technology

Research Intern (Advisor: *Dr. Shinichiro Kanoh*)

Tokyo, Japan

Sep – Nov 2019

- **Project:** “Design Motor Imagery Protocol To Adapt ERD/ERS Response.”

- * **Responsibilities:** conduct experimental analysis on EEG visualization for motor cortex response and how to conduct neuro-feedback during BCI experiment.

Faculty of Applied Science, VNU-HCM University of Technology

Undergraduate Research

HCMC, Vietnam

Jun 2018 – Mar 2019

- **Project:** “Exercise Physiology Application: Cardiac Endurance Training for Students by Stationary Bike”.

Collaboration: HCMC Institute of Biomedical Physics. **Funder:** FAS, HCMUT. **My Role:** Technical Lead.

- * **Responsibilities:** (1) to design circuits for workload adjustment adapting to the biker’s heart rate; (2) to evaluate VO2max improvement on healthy college students (n=15, 2 months) over endurance training course.

FUNDINGS

[Oct 2025 - Jun 2026] Neuroplasticity Tracking During Intervention For Depression and Anxiety: A Longitudinal, Cognitive-guided Digital Phenotyping Study

- Funder: Neuroscience Capacity Accelerator for Mental Health 2025 (IBRO/Wellcome)
- Amount: 60,000 USD
- Role: Lead Proposal Writing, Project Tech-Lead.

[Jan - Sep 2025] Multimodal Data Modeling Framework for Early Depression Detection

- Funder: Signal Processing Mentorship Academy 2025 (IEEE SPS)
- Amount: 3,500 USD
- Role: Lead Proposal Writing & Project Execution.

TEACHING

Graduate Teaching Assistant @ CECS, VinUniversity

- COMP1010 Introduction to Programming (Fall’25)
- COMP1020 Object-Oriented Programming and Data Structures (Spring’25, Spring’26)
- COMP3040 Computer Vision (Fall’24, Fall’25)

Graduate Teaching Assistant @ CISE, Ritsumeikan University

- Experiments in Artificial and Natural Intelligence (Fall’22)

AWARDS

- [Jul 2026] Vingroup Science and Technology Scholarship Program for Overseas Study; by Vingroup.
- [Mar 2026] Top 30 QVIC 2026; by Qualcomm Vietnam.
- [Feb 2026] Travel Grants (600 USD); by IBRO.
- [Jan 2025] Travel Grants (3500 USD); by IEEE SPS.
- [Aug 2024] Fully-funded Doctoral Fellowship; by VISHC, VinUniversity.
- [Aug 2022] 2nd prize in Kyoto Startup Weekend Competition; by Techstars.
- [Mar 2022] GAKKAI scholarship; by Ritsumeikan University.
- [Sep 2021] Fully-funded Monbukagakusho (MEXT) Scholarship; by Japanese Government.

PATENTS

- The brain-computer interface system controls the mouse cursor based on motor imagination and neural states. *Intellectual Property Office of Vietnam* (Under Review)

PUBLICATIONS & MANUSCRIPTS

Manuscript Under Review

- **Cuong Q. Pham**, Duong T. H. Vu, Long K. H. Nguyen, Hung K. Nguyen, Thu M. N. Phan, Dung T. T. Duong, Duy T. H. Le, Nicolas Vuillerme, Huong T. T. Ha, & Hieu H. Pham. (2026). A multimodal digital phenotyping dataset for depression and anxiety assessment under free-living conditions *Scientific Data*. (Under Review)
- Tuong. H. N., Long. K. H. N., **Cuong Q. P.**, Hung P. N., Minh D. T. N., & Huong, T. T. H (2026). Cue Design and Semantic Feedback Improve Temporal Consistency of Motor Imagery in EEG-Based Brain-Computer Interfaces. *Frontiers*. (Under Review)

2026

- **Cuong Q. Pham** *et al.* A multimodal digital phenotyping dataset for depression and anxiety assessment under free-living conditions (1.0.2) [Data set]. *Zenodo*. DOI: 10.5281/zenodo.21969065 [dataset] [github]
- **Pham, Q. C.**, Vu, H. T. D., Ha, T. T. H., & Pham, H. H. (2026). Neurai-VN Benchmark: Standardized Machine Learning Models for Multimodal Digital Phenotyping in Mental Health Classification. *arXiv preprint arXiv:2607.25232*. [arxiv] [github]
- Vu, H. T. D., **Pham, Q. C.**, & Pham, H. H. (2026, July). VISHC at PsyDefDetect: Mitigating Data Scarcity in Psychological Defense Classification with Context-Aware Synthetic Augmentation. In *Proceedings of the BioNLP 2026 (Shared Tasks)* (pp. 77-86) [paper] [github]

2023

- **Cuong Q. Pham**, Kashiara Koji (2023). Remote Photoplethysmography Assessment Using Deep Learning. *Dissertation @ GSISE, Ritsumeikan University*.

2022

- **C. Pham** and K. Kashiara (2022, March), A Hybrid Controller for Multiple Drug Infusion in Heart Failure using Convolutional Neural Network. In *2022 IEEE 4th Global Conference on Life Sciences and Technologies (LifeTech)* (pp. 340-344). [paper] [github]
- Nguyen, M. T. D., **Pham, C. Q.**, Nguyen, H. N., Le, K. Q., & Huynh, L. Q. (2022), A Statistical Approach to Evaluate Beta Response in Motor Imagery-Based Brain-Computer Interface. *8th International Conference on the Development of Biomedical Engineering in Vietnam* (pp. 203-217). [paper] [github]

2020

- **Cuong Q. Pham**, Minh D. T. Nguyen, Khai Q. Le (2020). Studying Imagination of Limb Movement in the Brain-Computer Interface System. *Dissertation @ Ho Chi Minh University of Technology*.
- **Pham, Q. C.**, Nguyen, T. D. M., Le, C. D., Khai, Q., & Le, Q. L. H. (2020, May). Exercise Physiology: Improving Stationary Bike Training Performance Using Heart Rate Variability. *Proceedings of International Symposium on Applied Science 2019 (Vol. 3, pp. 100-108)*. [report]

TALKS

- [Apr. 2026] Neuroplastic Change During Cognitive-Behavioral Therapy for Depression and Anxiety: A Longitudinal Study @ *IBRO Complexity in Mental Health Workshop (Sicily, Italy)*.
- [Dec. 2024] Development and Evaluation of Multimodal AI Framework for Mental Health Assessment: A Preliminary Study @ *MCABBD workshop, Brain Informatics 2024 (Bangkok, Thailand)*
- [Jun. 2024] Evaluation of Cue-based Protocol Implementations in Motor Imagery - based Brain-Computer Interface Experiments @ *NeuroCoB/Brainconnects 2024 (Putrajaya, Malaysia)*.

ACADEMIC ACTIVITIES

School Projects

- **[Fall 2022]** WasteWise @ GSISE, Ritsumeikan University
 - Team of 6 collaborate with TH Nürnberg (Germany); develop an AI-based mobile app for trash-bins time collection recommendation in public spaces using crowdsourcing dataset.
 - **Achievement:** Deployed app and evaluated on the pilot data in Shiga and Kyoto city.
- **[Summer 2022]** Pic2Fit @ KYOTO Design Lab, Kyoto Institute of Technology
 - Designed a proof-of-concept virtual clothes fitting application tailored for small shops in Kyoto, Japan.
 - **Achievement:** Awarded at Kyoto Startup Weekend Competition.
- **[Fall 2018]** Stationary Bike @ VNU-HCM University of Technology
 - Designed circuits for workload adjustment adapting to the biker's heart rate; collaborated with HCMC Institute of Biomedical Physics to evaluated VO2max improvement on students over endurance training course.
 - **Achievement:** The system is integrated into laboratory experiment course for students in afterwards cohorts.
- **[Spring 2017]** Pet Feeder
 - Tech-lead freelance team to design the low-cost automated pet-feeding system; conducted mechanical design and material 3D-printing, developed electrical circuits and platform for IoT user control.
 - **Achievement:** Delivered MVP to the reserved customers.

Communitiy Involvement

- **[Dec 2024]** Conference Staff @ ACML 2024 (Hanoi, Vietnam).
- **[Jan '203]** Teaching Staff @ Ritsumeikan Junior High (Kyoto, Japan).
- **[Oct 2022]** Conference Staff @ IEEE/RSJ IROS 2022 (Kyoto, Japan).

SELECTED SKILLS

- **Programming:** Python, JavaScript, TypeScript, MATLAB, R, SQL, C#, Bash/Linux
- **Machine Learning:** OpenCV, Scikit-learn, LightGBM, XGBoost, Keras, PyTorch, Lightning
- **System Development:** Web (React, CSS), Mobile (React Native), Backend (Flask, FastAPI)
- **Cloud:** AWS (S3, EC2, Lambda), GCP
- **Databases:** MySQL, PostgreSQL, MongoDB, Firebase
- **Tools:** Git, Docker, Jira, Streamlit, Lab Streaming Layer
- **Miscellaneous:** Data Analysis (scipy, pandas, ggplot2, dplyr), Bio-Signal Experimentation (ECG, EEG, PPG, EMG, wearable/bio-sensors), Signal Processing (spectral & time-frequency analysis, transformations, filtering), Circuit (Arduino, Raspberry Pi)
- **Language:** Vietnamese (native), English (professional, IELTS 7.0)

REFERENCE

Hieu Pham, Ph.D.

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Scientific Director, Entrepreneurship Lab (E-lab),
PI at VinUni-Illinois Smart Health Center, VinUniversity.
Email: hieu.ph@vinuni.edu.vn

Ha Thi Thanh Huong, Ph.D.

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Chair, Department of Tissue Engineering and Regenerative Medicine
School of Biomedical Engineering, International University
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