Hai-Nam PHAM

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Objective

PhD researcher at Inria Rennes, focusing on perception and interaction through avatars in virtual reality.

Education

Université de Rennes & Inria Rennes — Rennes, France
Doctor of Philosophy (Ph.D.) in Computer Science — Since 10/2026

- **Research Topic:** *Perception and Interaction through Avatars in Virtual Reality*
- **Supervisors:** Dr. Anatole LÉCUYER (Main)
  Dr. Ferran ARGELAGUET (Co-director) and Assoc. Prof. Rebecca FRIBOURG (Co-supervisor)

Université Paris Cité — Paris, France
Master's in Interdisciplinary Approaches to Research and Education (AIRE) — 09/2024 - 08/2026

- SMARTS-UP Excellence Scholarship by Université Paris Cité (2024–2025 & 2025–2026)
- **Notable Coursework:** Data Science, Python & Statistics, Extended Reality, Neuroscience & Mental Health.
- **GPA:** M1 grade: 14.71/20 & M2 grade: 17.62/20
- **Thesis:** *Understanding the neural activity underlying Collaborative Decision-Making using Immersive Technologies* (**Grade:** 17.58/20)
- **Supervisor:** Assoc. Prof Huyen NGUYEN

University of Science and Technology of Ha Noi (Vietnam - France University) — Hanoi, Vietnam
BSc. in Data Science — 08/2021 – 08/2024

- **GPA:** 14.90/20 | **Notable Coursework:** Computer Vision, Graph Analytics for Big Data, Data Visualization.
- **Thesis:** *Pre-processing and processing data acquired from liquid-chromatography coupled with mass spectrometry for metabolomics comparison between Vietnamese healthy controls and patients with colorectal cancer* (**Grade:** 15.6/20)
- **Supervisor:** Assoc. Prof Thi-Kieu-Oanh NGUYEN

University of Science and Technology of Ha Noi (Vietnam - France University) — Hanoi, Vietnam
BSc. in Pharmacological, Medical and Agronomical Biotechnology (PMAB) — 08/2017 – 08/2020

- **GPA:** 14.45/20 | **Notable Coursework:** Introduction to Neuroscience, Bioinformatics, Biostatistics.
- Granted a 25% Merit-based Tuition Fee Scholarship (2017)
- **Thesis:** *Evaluation of correlation between heavy metal levels – secondary metabolites contents – antioxidant activity of Pteris vittata using multivariate analysis*. (**Grade:** 16.1/20)
- **Supervisor:** Assoc. Prof Thi-Kieu-Oanh NGUYEN

Academic Experience

Ph.D. in Computer Science

Ph.D. Researcher - Perception and Interaction through Avatars in Virtual Reality — Rennes, France
SEAMLESS Team, Inria Rennes - Université de Rennes — Since 10/2026

- Studying how anthropomorphic avatars affect spatial perception in immersive territorial digital twins.
- Designing avatar-based interactions for exploring 3D content and collaborating in shared virtual environments.
- Evaluating spatial perception, interaction performance, and user experience through controlled user studies.
  Funding: *National JUNN Digital Twin Project*

Master's Studies in AIRE

Master 2 Internship 2 - Understanding the neural activity underlying Collaborative Decision-Making using Immersive Technologies — Orsay, France
LISN, CNRS & Université Paris-Saclay — 02/2026 - 07/2026

- Engineered an immersive VR system in Unreal Engine (Blueprints/C++), implementing interaction logic, state-driven narrative flow, and real-time user input handling.
- Designed embodied decision-making scenarios with user interaction tracking and behavioral data capture.
  Funding: *PEPR eNSEMBLE*

Master 2 Internship 1 - Mindrift - Designing a Multimodal Active Learning Sequence to Promote Decision-Taking on Fashion Consumption — Paris, France
Learning Planet Institute – Université Paris Cité — 10/2025 - 02/2026

- Develop an immersive VR experience in Unity3D (Text-to-Speech/Speech-to-Text, and LLMs (GPT-5)), designing interactive systems, user flow, and embodied decision-making scenarios.
- Co-design a multimodal learning framework (VR, podcast) integrating experiential learning

  Funding: *ChallengeHub*

Master 1 Internship - AI-Driven Virtual Reality (VR) — Orsay, France
LISN, CNRS & Université Paris-Saclay — 03/2025 – 08/2025

- Designed VR soft-skills training scenarios using Unity3D, Text-to-Speech/Speech-to-Text, and LLMs (GPT-4o).
- Led experiment design, participant recruitment, and data collection for AI-driven VR evaluation.
- Analyzed engagement and performance data, 80% participant preference for the AI-driven model.

Bachelor's Studies in Data Science

Project Leader & Researcher in Applied Technology for Life Sciences — Hanoi, Vietnam
Information & Communication Technology and Life Sciences Laboratories - USTH — 09/2022 – 03/2024

Project 1: Metabolomics Profiling for Colorectal Cancer (CRC) Biomarker Discovery

- Processed and analyzed 58 UPLC-QToF-MS datasets (49 CRC, 9 Healthy Controls (HC)) by R (XCMS) and Progenesis QI.
- Built statistical models for biomarker selection, identifying 6 metabolites differentiating CRC from controls.

Project 2: CaloCam – Food Ingredients Recognition and Calorie Estimation Model

- Built YOLOv8 + FoodSAM model, boosting accuracy by 10%.
- Led 3-member team to create mobile app for Vietnamese food recognition (mIoU 47.52%, FoodSeg103).
- Managed full lifecycle: dataset, training/testing, UI/UX, and pitching.

Project 3: Real-Time Facial Recognition Model

- Led 5-member team to build a deep learning–based framework using YuNet, ResNet34, and SVM.
- Collected datasets (WIDER FACE, Glint360k, AgeDB, manual), achieving 98.81% accuracy at 30 FPS.

Bachelor's Studies in PMAB

Research Internship in Chem-informatics and Natural Products Chemistry — Hanoi, Vietnam
Life Sciences Laboratory – USTH & Institute of Natural Products Chemistry (VAST) — 03/2020 – 08/2024

Project 1: Correlation of Heavy Metal Levels, Secondary Metabolites, and Bioactivities in *Pteris vittata*

- Conducted multivariate analysis of TPC, TFC, and antioxidant data from 70 plant samples using R.
- Applied Pearson correlation and Cytoscape network mapping, automating data structuring and visualization.

Project 2: Docking studies of chemical constituents from Cannabis Sativa for anti-malarial activities

- Constructed 2D/3D structures for 125 *Cannabis Sativa* compounds and optimized them using MM2 algorithm.
- Applied computational tools (AutoDock, PyMOL, Discovery Studio) and analyze molecular docking simulations.
- Identified 10 potential antimalarial compounds through virtual screening and binding energy analysis.

Working Experience

Project Leader & English Teacher — Hanoi, Vietnam
Educational Start-up & LAPO TALK ENGLISH — 11/2020 - 09/2024

- Trained 300+ Vietnamese students and professionals to deliver public speeches in English.
- Designed and implemented R&D initiatives in learning sciences for curriculum development.

Skills

Languages: Vietnamese (Native), English (C1), French (DELF B1)

Technical Skills: Python, R, C#

Technologies: PyTorch, Scikit-learn, Pandas, NumPy, Matplotlib, Jupyter Notebook, Unity3D, Unreal Engine 5.6

Research Equipment: Meta Quest Pro/2/3, EmpaticaPlus

Honors & Awards

- 2nd Prize, An innovative start-up project presented at USTH's Inno-Inspiration competition (2023)
- 2nd Prize, A university-level Start-up Ideas Competition recognizing innovative project concepts (2023)
- 1st Prize, USTH-20 Research Project Competition for an outstanding undergraduate research project (2019)

Extracurricular Engagement

Organizing Committee - Thematic workshop about Entrepreneurial Ecosystems — Paris, France
Venue: Learning Planet Institute (LPI) — 02/2026

Invited Speaker – UNESCO & LPI — Paris, France
RE-ACT 2025 - International Conference on Higher Education — 06/2025
- Panelist: "Universities in an Age of Polycrisis"

Trainee - English for Startups — Hanoi, Vietnam
University of Languages and International Studies, Vietnam National University — 03/2024 - 08/2024

Other activities

- Certificate for Volunteer and Charity Activities Participation (2022 & 2023)
- Fourth Prize Certificate - Energized Entrepreneurship Workshop (2020)
- Certificate for "Gender Empowerment in STEM" - UNESCO (2018)

Certifications

- Data Analysis for Life Sciences – HarvardX Professional Certificate
- Fundamentals of Neuroscience – HarvardX XSeries Certificate
- Advanced Data Analytics & AI Essentials – Google (Coursera)

Scientific Publications

- Nguyen PN, Nguyen NL, **Pham HN**, Nguyen PK, Nguyen Thi KO. *Antioxidant and Antibacterial Activities of Pteris vittata L. Extracts from Metalliferous Soils: Correlations with Phenolic Compounds.* Natural Product Communications, 2025, 20(2). doi:10.1177/1934578X251322868

- **Pham, HN**; Nguyen, HG (2024). Metabolomics Analysis for Fecal Samples with Colorectal Cancer in Vietnam. *Research Conference, East Asia University of Technology*. ISBN: 978-604-492-928-6.

- Le, MMP; **Pham, HN**; Le, TD (2024). Drug Discovery and AI in Preclinical Development. *Research Conference, East Asia University of Technology*. ISBN: 978-604-492-928-6.

- Le, TD; Nguyen, NL; **Pham, HN** (2023). Applications and Trends of Digital Transformation in Pharmaceutical Development. *National Scientific Conference, East Asia University of Technology*. ISBN: 978-604-393-977-4.

- Quan, PM; Huong, LTT; Toan, TQ; Hung, NP; **Pham, HN**; *et al.*. Cannabis *sativa* L. chemical compositions as potential *Plasmodium falciparum* enzyme inhibitors: An *in silico* study. *Open Chemistry*, 2021, 19(1), 1235–1241. https://doi.org/10.1515/chem-2021-0102