

Nghia H. Nguyen

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RESEARCH INTERESTS

- Machine Learning, Optimization, Differential Equations, AI4Science, Generalization

EDUCATION

University of Science, Vietnam National University - Ho Chi Minh (VNU-HCM) Sep. 2017 - Nov. 2021

- Bachelor of Science in **Computer Science** - Advanced Program in Computer Science. The “Advanced Program in Computer Science” is highly selective, similar to a Bachelor with Honors program.
- **GPA: 3.97/4.00** (Top 5/92 in the cohort). The university is among the *top 2* in Vietnam in CompSci.
- Thesis topic: “*Body-part Aware Network and Object Affordance Masking* mechanism for *Human-Object Interaction Detection*.” Supervised by [Associate Professor Minh-Triet Tran](#).

RESEARCH EXPERIENCE

FPT Software AI Center Ho Chi Minh City, Vietnam
AI Research Resident (Predoctoral Researcher) Oct. 2021 - Present

- Advisors: [Dr. Tan M. Nguyen](#) (UCLA), [Dr. Thieu N. Vo](#) (Ton Duc Thang University).
- Derived the continuous adjoint equation for the Nesterov Neural ODE, an important theoretical result for our work.
- Implemented the method and ran experiments of Nesterov Neural ODE on image classification, continuous normalizing flows, and point cloud separation.

VinBrain Ho Chi Minh City, Vietnam
Applied Scientist Intern Apr. 2021 - Aug. 2021

- Supervisor: [Dr. Soan T.M. Duong](#) (University of Wollongong)
- Improved the object detection model mAP@0.5 score over two times from a pretrained model when tested on a custom version of the Open Images v6 dataset.

LSIR, École Polytechnique Fédérale de Lausanne Lausanne, Switzerland (Remote from Vietnam due to COVID-19)
Research Intern May 2020 - Oct. 2020

- Supervisor: [Ph.D. Candidate Chi Thang Duong](#) (EPFL)
- Worked on a Subtree-Reuse-based SQL Query Optimizer using Graph Neural Network and Box Embeddings.
- Performed experiments on the Attribute Discovery dataset to verify the plausibility of a new Multimodal Feature Fusion method using Graph Neural Networks, achieving a test accuracy of 96.86% on this dataset.

Faculty of Information Technology, University of Science, VNU-HCM Ho Chi Minh City, Vietnam
Research Assistant Sep. 2019 - Aug. 2020

- Discovered the correlation between forking patterns, software health and risks in software repositories.
- Performed inference in the Software Heritage Dataset to extract forking patterns between 50,000 repositories using PostgreSQL and Neo4J.

SELECTED PAPERS

Nghia H. Nguyen*, Long Bui*, Huyen K. Vo*, Tan M. Nguyen, Stanley Osher, Thieu N. Vo, “**Continuous Optimization Neural ODEs**,” *In preparation*. * indicates co-first authors.

Nghia H. Nguyen*, Tan M. Nguyen*, Huyen K. Vo, Stanley Osher, Thieu N. Vo, “[Improving Neural Ordinary Differential Equations with Nesterov’s Accelerated Gradient Method](#),” *Advances in Neural Information Processing Systems (NeurIPS)*, 2022. New Orleans, Louisiana, USA. * indicates co-first authors.

Tuan-Duy H. Nguyen, **Huu-Nghia H. Nguyen**, “[Towards a Robust WiFi-based Fall Detection with Adversarial Data Augmentation](#),” *54th IEEE Annual Conference on Information Sciences and Systems (CISS)*, 2020. Princeton, New Jersey, USA.

ACHIEVEMENTS & AWARDS

- Scholar award; Advances in Neural Information Processing Systems (NeurIPS) 2022
 - Granted full registration fee and free hotel stay in New Orleans.
- Participant; Pre-PhD Summer School by VinUni-Illinois Smart Health Center, VinUniversity 2022
 - Top 50/220 applicants.
- Dean's List; Advanced Program in Computer Science, University of Science, VNU-HCM 2020, 2018
 - Top 5/92 students.
- Honorable Mention; Vietnam National Olympiad for Undergraduates in Informatics 2019
- **2nd** place; The University of Science VNU-HCM Olympiad in Informatics 2019
- Participant; Vietnam Summer School of Science (VSSS) '07 2019
 - Among 161 participants chosen from 1760 applicants nationwide.
 - 3rd prize; VSSS Science Hackathon.

OTHER EXPERIENCE

Big-O Coding Ho Chi Minh City, Vietnam
Teaching Assistant, Problem Setter, Software Engineer Jul. 2018 - Dec. 2020

- Explained Algorithms and Data Structures concepts to students at Big-O Coding weekly and prepared more than 20 programming problems.
- Built version 1 of the Front-end Web Application for Big-O Coding's website to host programming problems and contests for up to 1,900 users using React JS.
- Reduced page traversing paths for administrators by 50% by implementing a shortcut to problems.

Pathfinder Vietnam Ho Chi Minh City, Vietnam
Founder, Product Team Leader, Software Engineer Sep. 2018 - May 2020

- Led product team of 6 in implementing the Minimum Viable Product using React JS and NodeJS.
- Introduced the product's core feature by implementing the programming testing system.

SKILLS

- Programming Languages: C++, Python, Javascript, Java, HTML, CSS, SQL.
- Frameworks and Tools: PyTorch, TensorFlow, ReactJS, Redux, Android SDK, Linux, Git.
- English proficiency: IELTS Academic **8.5/9.0** (Reading: 9.0, Listening: 9.0, Writing: 7.5, Speaking: 7.5).

SIDE PROJECTS

What The Food app 2018

- Implemented a Convolution Neural Network to identify 101 types of food using TensorFlow.
- Converted the Keras model to a TensorFlow Lite model and deployed the model on an Android application using Firebase ML Kit.

EXTRACURRICULAR ACTIVITIES

ICLR, ICML Remote from Ho Chi Minh City, Vietnam
Volunteer Apr. 2020, Apr. 2021, Aug. 2021

- Checked the websites for possible bugs and answered questions from participants.

Google Developers Students Club at the University of Science, VNU-HCM Ho Chi Minh City, Vietnam
Content Staff Nov. 2019 - Sep. 2020

- Helped to prepare the content and venue for a Git Introduction seminar.