

Nhan H. T. Luong

☎ +84 913 598 499 | ✉ hatrinhanluong@gmail.com | [in](#) LinkedIn | [G](#)itHub | [B](#)log | 📍 Hanoi, Vietnam

INTERESTS

My interest lies in the intersection of computer science, astronomy, and (astro)physics. Within the field of computer science, my primary interests are within **visual computing** (computational imaging, computer vision, computer graphics, visualization) as well as **data-intensive science** (numerical methods, simulation, data processing, machine learning, deep learning).

I am also passionate about teaching and inspiring new generation of scientists and engineers by cultivating their love for science and technology.

EDUCATION

Monash University

Melbourne, Australia

*BCompSci (Honours) in Computer Science; **First Class Honours** - GPA: 4.00/4.00*

Jul 2021 – Jul 2022

- **Thesis:** An Exploration of Immersive Smoothed-Particle Hydrodynamics Data Visualisation in Astrophysics and Astronomy ([PDF version](#)).
- **Supervisors:** [Prof. Daniel Price](#), [Dr. Barrett Ens](#), [Dr. Maxime Cordeil](#).
- **Coursework:** Statistical modelling; Machine learning; Computer vision; Deep learning; Data visualization.
- **Audited courses:** Astronomy; Introduction to astrophysics.

Monash University

Melbourne, Australia

*BCompSci in Advanced Computer Science; **High Distinction** - GPA: 3.60/4.00*

Jul 2018 – Jul 2021

- **Coursework:** Advanced algorithms & data structures; Computational modelling & simulation; Functional programming; Object-oriented design; Databases; Theoretical computer science; Parallel programming; Operating systems; Mathematics for modelling (linear algebra; multivariable calculus).

Hanoi University of Science - Vietnam National University

Hanoi, Vietnam

BSc (Advanced) in Physics

Jul 2017 – Dec 2017

- **Transferred.**
- Top 1 score on entrance exam.

SKILLS

Languages: Python, Java, C#, GLSL/HLSL, JavaScript, MATLAB, R, Swift, Kotlin

Technologies: PyTorch, TensorFlow, Flask, Node.js, React.js, MongoDB, Git, Docker, Cloud Computing, Unity, Tableau

WORK EXPERIENCE

VinUniversity

Hanoi, Vietnam

Teaching Assistant

Oct 2022 – Present, Part-time

- COMP1010 & BANA3020 - Introduction to Programming (Fall 2022, Fall 2023).
- COMP3010 - Algorithm Design (Spring 2023)
- PHYS2030 - Physics III (Spring 2023).

Deloitte Digital

Melbourne, Australia

Software Engineer Consultant — Industry-based Learning

Jan 2021 – Jun 2021, Full-time

- Digital consulting and Agile software development experience.
- Experience with Confluence, JIRA, BitBucket/Git, Azure build pipelines and SonarQube.
- Software design, development, testing, pilot readiness and delivery.
- Developed mobile application with Kotlin, Swift, JavaScript, Postman, AWS S3, AWS Lambda.
- Developed virtual assistant development with Unity, C#, AWS Lex, AWS Polly, AWS Transcribe.
- Developed interactive AR pegboard with OpenCV, PyQt5, C#, Unity.

RESEARCH EXPERIENCE

VinUniversity — [Security and Artificial Intelligence Lab](#)

Hanoi, Vietnam
Oct 2023 – Present, Part-time

Research Assistant

- **Survey on practicality of federated learning in IoT**

Gained a grasp of benefits, challenges applications, of federated learning and current state-of-the-art. Conducted literature survey and designed taxonomy of contemporary federated learning landscape in communication efficiency perspective under supervision of [Assoc. Prof. Kok-Seng Wong](#).

(Manuscript in preparation for ACM Computing Survey, December 2023)

VinUniversity — Digital Material Science Lab

Hanoi, Vietnam
Oct 2022 – Present, Full-time

Research Assistant

- **AI for MOF material discovery project (in collaboration with UC Berkeley & Monash University)**

Developed image recognition system and web application for fast batch crystal detection from automated microscopy images of high-throughput chemistry experiments. Implemented, trained, and conducted performance benchmark of state-of-the-art image classification methods (architectures, augmentations, regularization) on our new dataset of metal-organic framework crystals (MOFs) images. Proposed a novel method for dataset-specific augmentation using StyleGAN3 for reliable mixing.

(Manuscript in preparation for Nature Communications, early 2024)

- **Inverse design for nanophotonics metasurface material topology optimization**

Conducted literature review to identify current trends in nanophotonics material inverse design using deep neural networks. Led an initiative to investigate practicality of applying published methods for finding materials with desired optical properties via topological optimization.

- **Spatial lifetime mapping of perovskite quantum dots coupled with a dielectric metasurface**

Operated fluorescence lifetime imaging system, and processed and analyzed measurement data. Applied time-correlated single photon counting to determine photon lifetime of perovskite quantum dots on metasurface.

Monash University — [Immersive Analytics Lab](#)

Melbourne, Australia
Nov 2021 – Mar 2022, Full-time

Research Scholarship

- **Hand Gesture Capture for Interactive Data Analytics**

Continued developing a web application to record intuitive hand gestures for data exploration and navigation in real-world space. Prepare user study under the supervision of [Dr. Barrett Ens](#).

AWARDS & ACHIEVEMENTS

Teaching Excellence Award – Awarded to 2 Teaching Assistant and 8 Faculty members who were nominated by colleagues and students for delivering excellence in teaching and supporting student learning.

(VinUniversity, 2023)

Undergraduate Vacation Research Scholarship – Awarded to undergraduate students who were selected take part in research projects at Monash University over a vacation period.

(Monash University, 2021)

Information Technology IBL Placement Scholarship – Awarded to undergraduate students after a highly selective multi-round interview process to work at a partner organization as a full-time graduate-level employee for one semester.

(Monash University, 2021)

Information Technology International Merit Scholarship (3 years) – Awarded to incoming international students with outstanding academic background and achievements.

(Monash University, 2018)

PUBLIC OUTREACH & OTHER ACTIVITIES

Public lecture/Teaching demo – Computational thinking and algorithm design for high school students.

(VinUniversity, 2023)

Workshop – D3.js for data visualization.

(Monash Association of Coding, 2022)

Hackathon – MACathon 2022: Enabled opportunity for university students work together and develop a solution for bettering Australia.

(Monash Association of Coding, 2022)

Peer mentoring – Provided mentoring guidance to 11 student mentees as they started first year at Monash, supporting them through orientation and their transition to university.

(Monash University, 2020)