

# Nhu Ngoc Hoang

Tel: +32 (0)49 298 4791 | [linkedin.com/in/ngocnhoang](https://www.linkedin.com/in/ngocnhoang) | [nhungoc1508.github.io](https://github.com/nhungoc1508) | [ngoc.hoang@nyu.edu](mailto:ngoc.hoang@nyu.edu)

## EDUCATION

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### Universitat Politècnica de Catalunya

Barcelona, Spain

*Master Erasmus Mundus in Big Data Management and Analytics*

Since 02/2025

- Awarded a full ride scholarship to pursue the Erasmus Mundus Joint Master in Big Data Management and Analytics.
- Coursework: Big Data Management, Semantic Data Management, Machine Learning, Viability of Business Projects, Big Data Seminars, Debates on Ethics of Big Data.

### Université Libre de Bruxelles

Brussels, Belgium

*Master of Science in Computer Science and Engineering*

09/2024 – 01/2025

- Awarded a full ride scholarship to pursue the Erasmus Mundus Joint Master in Big Data Management and Analytics.
- Coursework: Data Warehouses, Data Mining, Database Systems Architecture, Advanced Databases, Management of Data Science and Business Workflows.

### New York University Abu Dhabi

Abu Dhabi, United Arab Emirates

*Bachelor of Science*

08/2019 – 05/2023

- Major in Computer Science, minors in Applied Mathematics and Interactive Media.
- GPA: 3.906/4.0
- Named University Honors Scholar and awarded the NYU Founders' Day Award for top-ranking graduating seniors.
- Relevant coursework: Discrete Math, Data Structures, Algorithms, Computer Systems Organization, Software Engineering, Operating Systems, Computer Networks, Introduction to Machine Learning, Natural Language Processing, Artificial Intelligence, Processing Big Data for Analytics Applications, Multivariable Calculus, Linear Algebra, Probability and Statistics.
- Bachelor thesis: *Anomaly Detection Using AutoEncoders: the Advanced Persistent Threats Case*.
  - Researched and implemented AutoEncoder-based methods to detect advanced persistent threats by reconstructing system-level provenance data.
  - Developed models highlighting anomalous system activities within highly imbalanced data, showcasing strong capabilities to detect anomalies outperforming various baseline algorithms.

## PROFESSIONAL & RESEARCH EXPERIENCES

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### Software Engineer

10/2023 – 08/2024

*LG Electronics Development Vietnam*

Da Nang City, Vietnam

- Developed and maintained C++ modules for over-the-air (OTA) firmware updates in in-vehicle infotainment (IVI) systems, conducting sanity testing and debugging to ensure compliance with requirements.
- Designed and implemented a software update module that integrated a third-party OTA solution, handling package management, update execution, and status reporting.
- Collaborated with fellow engineers to design system architecture and APIs, and contributed to cross-functional debugging across multiple update modules.
- Automated internal processes by creating tools to generate test packages, improving efficiency in testing and validation workflows.

### Research Assistant

05/2023 – 07/2023

*Center for Quantum and Topological Systems, NYU Abu Dhabi*

Abu Dhabi, United Arab Emirates

- Conducted preliminary research and experiments in formalizing braid groups as automorphisms of free groups using the dependently typed functional programming language Agda.

## Application Security Intern

Wio Bank P.J.S.C.

02/2023 – 05/2023

Abu Dhabi, United Arab Emirates

- Conducted static analysis of Android and iOS apps to ensure security standards and detect vulnerabilities.

## Research Assistant

Department of Civil and Urban Engineering, NYU Tandon

06/2022 – 08/2022

New York, NY, United States

- Joined the Behavioral Urban Informatics, Logistics, and Transport Laboratory researching urban mobility.
- Conducted analysis using BigQuery to process and validate big datasets (each containing over 200 million records), visualized findings with various maps and data dashboards.
- Optimized an algorithm for the capacitated user equilibrium problem by 90%, reducing runtime from 24 to 1.5 minutes by conducting extensive code review to identify bottlenecks and applying vectorization.
- Designed, ran, analyzed a program running genetic algorithm for parameter estimation for project on stochastic user equilibrium.

## Research Assistant

Center for Global Sea Level Change, NYU Abu Dhabi

05/2021 – 07/2021

Abu Dhabi, United Arab Emirates

- Implemented and evaluated a probabilistic model for predicting long-term shoreline changes given geomorphological and geologic settings under different sea level rise scenarios.
- Conducted processing, interpolation, projection on geospatial datasets of Abu Dhabi shoreline.
- Wrote customized Python scripts for maps intersection and model prediction that shortened run time from over 6 hours to under 20 minutes.

## PUBLICATIONS

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Sidahmed Benabderrahmane, **Ngoc Hoang**, Petko Valtchev, James Cheney, Talal Rahwan, "Hack me if you can: Aggregating autoencoders for countering persistent access threats within highly imbalanced data", *Future Generation Computer Systems*, 2024. DOI: [10.1016/j.future.2024.06.050](https://doi.org/10.1016/j.future.2024.06.050).

Joseph Y J Chow, Xiyuan Ren, and **Ngoc Hoang**. "NY Statewide Behavioral Equity Impact Decision Support Tool with Replica", *Connected Communities for Smart Mobility Toward Accessible and Resilient Transportation for Equitably Reducing Congestion (C2SMARTER)* Tier-1 University Transportation Center (UTC), 1 July 2023, [rosap.ntl.bts.gov/view/dot/72373](https://rosap.ntl.bts.gov/view/dot/72373).

**Ngoc Nhu Hoang**. "A Vietnamese Named Entity Recognition System for COVID-19 Articles". *2022 IEEE MIT Undergraduate Research Technology Conference (URTC)*, IEEE, 30 September 2022. DOI: [10.1109/URTC56832.2022.10002170](https://doi.org/10.1109/URTC56832.2022.10002170).

## CONFERENCE PRESENTATION

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"A Vietnamese Named Entity Recognition System for COVID-19 Articles", *2022 IEEE MIT Undergraduate Research Technology Conference*, Cambridge, MA, United States. October 2022 (virtual paper presentation).

## COMPETITION

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### NYU Abu Dhabi Hackathon

04/2022

*qSa'id - Quantum-ML-Assisted Diagnostic Treatment Access Platform for Autism*

- Created for NYUAD Hackathon for Social Good in the Arab World 2022 focusing on Quantum Computing.
- Team won Best social good applied to the region.
- Built a screening tool for Autistic Spectrum Disorder using neural network that achieved 95.1% accuracy on test data and demo platform using Flask for back-end and Bootstrap for front-end design.

## SKILLS

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**Programming languages:** Python, C, C++, JavaScript, Swift

**Web development:** HTML, CSS, Express, NodeJS, Flask

**Other software proficiency:** Figma, Adobe Photoshop, Adobe Lightroom, DaVinci Resolve

**Languages:** Vietnamese (native), English (fluent), French (beginner)