Ngoc Nhu Hoang

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Education

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 Baccalaureate candidates and graduates
- Relevant coursework: Discrete Math, Data Structures, Algorithms, Computer Systems Organization, Software Engineering, Operating Systems, Introduction to Machine Learning, Computational Social Science, Multivariable Calculus, Linear Algebra, Probability and Statistics.
- Bachelor thesis: *Anomaly Detection Using AutoEncoders: the Advanced Persistent Threats Case.*
  - Advised by Professor Talal Rahwan, Department of Computer Science
  - 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.

New York University — New York, NY, United States
Study away program — 08/2021 – 12/2021

- Coursework: Artificial Intelligence, Natural Language Processing, Computer Networks, Processing Big Data for Analytics Applications.

Professional & Research Experiences

Software Engineer — 10/2023 – Present
LG Electronics Development Vietnam — Da Nang City, Vietnam

- Researching and developing automotive connectivity solutions for in-vehicle infortainment (IVI) systems with a focus on modules for over-the-air firmware update.

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 — 02/2023 – 05/2023
Wio Bank P.J.S.C. — Abu Dhabi, United Arab Emirates

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

Research Assistant — 06/2022 – 08/2022
Department of Civil and Urban Engineering, NYU Tandon — 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 05/2021 – 07/2021
Center for Global Sea Level Change, NYU Abu Dhabi 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

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.

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.

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.

Conference Presentation

"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

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.

Additional Experiences

Computer Science Peer Tutor 02/2022 – 05/2023
Unix Lab, NYU Abu Dhabi Abu Dhabi, United Arab Emirates

- Assisted 10+ students every week with Computer Science and programming-related coursework and projects.

Global Education Officer 02/2022 – 05/2023
Office of Global Education, NYU Abu Dhabi Abu Dhabi, United Arab Emirates

- Advised first-year students on global education policies and opportunities related to semester and short-term study away program.

Skills

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

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

Other software proficiency: Figma, Adobe Photoshop, DaVinci Resolve

Languages: Vietnamese (native proficiency), English (full professional proficiency, TOEFL iBT 118)