Minh-Duc (Aaron) Nguyen

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EDUCATION

Master of Science of Computer Science   **George Mason University**
Anticipated Graduation: December 2024
Bachelor of Science of Computer Science, minor in Statistics   **Miami University**
August 2018 - May 2022   Cumulative GPA: 3.75

EXPERIENCE

Research Engineer | *RobotiXX Lab, George Mason University* | Fairfax, VA, USA   *August 2022 – Present*
- Built the first complete navigation and manipulation interface for *Fetch Manipulator Robot* using **Python** and **ROS**.
  - Enabled **real-time** full body control tasks with low-level joint control.
  - Executed visual object tracking through the application of the **AprilTag3D** algorithm.
  - Applied **Numpy** for matrix transformations between robot frames.
- Engineered innovative wearable for direct access to robot sensory data during human navigation tasks.
- Directed a **13**-member team in gathering over **100** km and **20** hours of navigation data for robot learning.
- Featured in the Proceedings of the 2023 International Conference on Intelligent Robots and Systems.

Research Engineer | *Department of Electrical Engineering, Miami University* | OH, USA   *August 2020 – December 2021*
- Optimally controlled group of drones (UAVs) using **PyTorch** implementation of *Deep Deterministic Policy Gradient*.
- Achieved policy convergence with a **20%** higher accumulated user satisfaction during UAV transitions.
- Enabled UAV group to adapt to dynamic user distribution using trained policy.

Research Intern | *Data Analytics for Complex Human Behaviors Lab* | OH, USA   *May 2020 – August 2020*
- Attained **90%** model accuracy in machine learning-based prediction of suicide attempts and ideations.
- Built the largest causal map on Adverse Childhood Experiences (ACEs) and suicide, using JavaScript and Python.
  - Included **946** interrelationships and **361** concepts.
  - Provided insights on the complex interplay between factors correlating to suicidal behaviors.
- Featured in the Proceedings of the 2021 International Conference on Advances in Social Networks Analysis and Mining

TECHNICAL PROJECTS

LinkedIn Posts Tracking | *Code*   *May 2023 – Present*
- Built an ETL pipeline that scrapes **100 MB** of LinkedIn job posts per second into a **MySQL** database on **EC2** instance.
- Designed **S.T.A.R** schema database storing over **1000** job posts from **450** companies using **MySQL** and **Python**.
- Extracted job details and requirements (compensation, skills, experience) using Regex and Named Entity Recognition.
- Delivered personalized job recommendations by aligning users' resumes with each job posting.

Self-driving car on Miami University's campus | *Code* | *Video*   *May 2023 – Present*
- Segmented driving lanes, detected traffic lights, and identified pedestrians with a **Raspberry Pi** camera using **OpenCV**.
- Optimized wheel steering and vehicle acceleration with closed-loop controller using GPS and visual inputs.

PUBLICATIONS

Toward Human-Like Social Robot Navigation: A Large-Scale, Multi-Modal, Social Human Navigation Dataset
Duc M. Nguyen, Mohammad Nazeri, Amirrera Payandeh, Aniket Datar, Xuesu Xiao
IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), 2023

Responsive Regulation of Dynamic UAV Communication Networks Based on Deep Reinforcement Learning
R. Zhang, **Duc M. Nguyen**, M. Wang, L. X. Cai, X. Shen
Broadband Communications, Computing, and Control for Ubiquitous Intelligence. Wireless Networks. Springer, 2022

Mapping the Complexity of Suicide by Combining Participatory Modeling and Network Science
Phillipe J. Giabbanelli, Michael C. Galgoczy, **Duc M. Nguyen**, Romain Foy, Ketra L. Rice, Nisha Nataraj, Margaret M. Brown, Christopher R. Harper
IEEE/ACM International Conference on Advances in Social Networks Analysis and Mining, 2021

SKILLS

- **Programming languages:** Python, SQL, C++, Java, JavaScript.
- **Frameworks:** SQL Server, MySQL, AWS (S3, EC2), Pytorch, TensorFlow, ROS, Numpy, Pandas.