

# HUY QUYEN (JASON) NGO

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## SUMMARY

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Seeking positions in Robotics, Human-Centered Machine Learning, and Human-Robot Interaction.

## EDUCATION

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<b>Doctor of Philosophy, Master of Science</b> , Robotics Carnegie Mellon University	<i>Sep 2021 - May 2026</i>
<b>Master of Science in Engineering</b> , Mechanical Engineering University of Michigan - Ann Arbor	<i>Sep 2019 - May 2021</i>
<b>Bachelor of Engineering</b> , Electrical & Electronic & Information Engineering Nagoya University	<i>Oct 2015 - Sep 2019</i>

## SKILLS

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**Programming Languages:** C, C++, Python, MATLAB

**Technical Skills:** ROS, Linux, Arduino, Deep Learning, PyTorch, Human Study, Statistical Analysis, User Experience

## EXPERIENCE

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**PhD Candidate**, Transportation, Bots, & Disability (TBD) Lab - Robotics Institute *Sep 2021 - Present*  
*Subtle Reaction Detection of Drivers and Passengers in Autonomous Vehicles - Collaboration with BMW*

- Designing modalities and deep learning pipeline on detecting subtle human reactions and emotions with behavioral data from in-car multi-camera videos and spoken languages.
- Developing game simulation for Advanced Driver Assistance Systems based on GTA V and StrangeLand for the human studies and testings of the Abnormality Detection.
- Developing preliminary Vision-Language Foundation Models for the problem of car interior scene understanding.

*Robot Proficiency Self-Assessment for Accessibility in Human-Robot Interaction*

- Developed Python programs for the control of the real-sized 7-DOF Fetch Robot, enabling automation and teleoperation capabilities on robots for various manipulation and interaction research.
- Conceptualized and executed robotic manipulation techniques to assess the performance of various modes of robot communications in failure scenarios during human-robot collaborative object manipulation tasks.
- Implemented speech and visual image projection as tools for robotic communications, enabling diverse verbal and nonverbal robot-to-human communications in explainable robots.
- Designed user studies with more than 30 in-person participants and perform statistical analysis to explore the influence of robot behaviors on humans, contributing to the understanding of explainable robots in human-robot interaction.
- Develop real-time legible motion planning algorithm based on potentialvector field planners in dynamic environments.
- Prototype intent-expressive motion planning for 7 DoF mobile robotic platform in robot-to-human handover tasks.

## INTERNSHIP EXPERIENCE

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**Research Scientist Intern**, Honda Research Institute USA *May 2024 - Aug 2024*

- Built a general multi-modal perception model for human state understanding during robot-initiated touch, which can be adapted to most physical human-robot interaction scenarios, using only computer vision and user study data.
- Developed an optimization-based behavior adaptation system for verbal and nonverbal robot behaviors for human state improvement, capturing human preference with learning and tree-based approaches.

**Applied Research Scientist Intern**, Aptiv LLC *May 2021 - Aug 2021*

- Implemented data-driven machine learning algorithms for map validation techniques and change detection for autonomous driving systems, which proved to be effective in real-world scenarios.
- Designed, and tested map validation systems using on-board radar to enable the detection of real-time map alterations in driving logs, as compared to established reference maps.
- Devised a comprehensive evaluation framework for map validation systems, taking into account accuracy, robustness, scalability, and other pertinent metrics for the company's autonomous vehicle platforms.

## FEATURED PUBLICATIONS

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**Ngo, H.Q.** & Soltani Zarrin, R. (2025). "Multi-Modal Perception and Behavior Adaptation Models for Human State Understanding and Interaction Improvement in Robotic Touch". *Submitted to IEEE International Conference on Robotics and Automation (IEEE ICRA 2025)*.

**Ngo, H.Q.** & Steinfeld, A. (2024). "Joint Potential-Vector Fields for Obstacle-Aware Legible Motion Planning". *IEEE International Symposium on Robot and Human Interactive Communication (IEEE RO-MAN 2024)*.

**Ngo, H.Q.**, Carter, E., & Steinfeld, A. (2024). "Human Perception of Robot Failure and Explanation During a Pick-and-Place Task". *Association for the Advancement of Artificial Intelligence 2024 Fall Symposium Series (AAAI FSS 2024)*.