# Hai Nguyen

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Experienced researcher in **data-driven decision-making** under **partial observability** and **uncertainties**, using **memory-based reinforcement learning** with the main focus on **robot manipulation applications**.

## Education

**Ph.D. in Computer Science**, Northeastern University (3.95/4.0), USA **2019 - 2024 (Expected)**
**M.Sc. in Unmanned Aircraft Systems Design**, University of Southampton, UK **2016-2017**
**B.Sc. in Control & Automation Engineering**, Hanoi University of Science and Technology, Vietnam **2007-2012**

## Engineering Skills

**Languages**: Matlab, C/C++, Python
**Technologies/Frameworks**: PyTorch, ROS, MuJoCo, PyBullet, Gazebo, OpenRave, Git

## Work Experience

**Ph.D. Student, LLPR Lab & Helping Hands Lab, Northeastern University** **Sep. 2019 - Present**
*Reinforcement Learning (RL) in Robotics under Partial Observability* *Advisors: Christopher Amato, Robert Platt*

- Leveraged privileged information during training for efficient memory-based RL, performed Sim2Real
- Leveraged domain symmetry for efficient memory-based RL under partial observability, performed Sim2Real
- Learned a planning-based agent using Bayesian Adaptive RL directly on robot hardware after a handful of episodes

**Research Intern, OMRON SINIC X Corporation, Tokyo, Japan** **May 2023 - Sep. 2023**
*Online RL under Partial Observability* *Mentors: Masashi Hamaya, Tadashi Kozuno*

- Combined RL + imitation learning (50 episodes of demonstrations to repopulate a replay buffer) to learn Peg-In-Hole directly on a UR5e robot using F/T feedback

**Research Assistant, ARA & ARL Lab, University of Nevada, Reno** **Sep. 2018 - Jun. 2019**
*Deep (Reinforcement) Learning Research* *Advisors: Kostas Alexis, Hung La*

- Developed an RL mobile robot agent to open doors autonomously from RGB images in MuJoCo
- Implemented visual-based crack detectors on steel structures and concrete bridges
- Developed an object detector using thermal images for team CERBERUS to deploy on drones underground (later won the DARPA Subterranean Challenge 2021)

**Flight Software Developer, Viettel Aerospace Institute, Vietnam** **2012-2016 & 2017-2018**
*Autopilot Software for Drones*

- Developed control & path planning algorithms for an FPGA-based autopilot for fixed-wing drones
- Developed hardware/software-in-the-loop using FlightGear and XPlane simulators

## Selected Publications (Full List)

"Symmetry-aware Reinforcement Learning for Robotic Assembly under Partial Observability with a Soft Wrist", *International Conf. on Robotics and Automation (**ICRA**), 2024*

"Equivariant Reinforcement Learning under Partial Observability", *Conf. on Robot Learning (**CoRL**), 2023*, Code

"On-Robot Bayesian Reinforcement Learning for POMDPs", *IEEE/RSJ International Conf. on Intelligent Robots and Systems (**IROS**), 2023*

"Leveraging Fully Observable Policies for Learning under Partial Observability", ***CoRL***, 2022, Code

"Hierarchical Reinforcement Learning under Mixed Observability", *International Workshop on the Algorithmic Foundations of Robotics (**WAFR**), 2022*

"Belief-Grounded Networks for Accelerated Robot Learning under Partial Observability", ***CoRL***, 2020, Code

## Awards

**Graduate Dean's Merit Scholarship**, University of Nevada, Reno ($**10k**) **2018**
**IMechE UAS 2017 Autonomous Drone Challenge**, Runner-up & Navigation Accuracy Award **2017**
**Chevening Scholarship**, British Foreign and Commonwealth Office (**2%** acceptance rate) **2016**