Philippe Nadeau

FULL-STACK ROBOTICIST

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EDUCATION

PhD in Aerospace Science and Engineering 2020-2025
Robotics Specialization - Robotics Institute
STARS Lab, University of Toronto Institute for Aerospace Studies
Supervisor: Prof. Jonathan Kelly
Thesis: *Autonomous Object Handling in Collaborative Robotics*
Average of 4.0/4.0

Automated Manufacturing Engineering 2016-2020
Departement of Systems Engineering
École de Technologie Supérieure, Montréal
Graduated with honors - Average of 4.25/4.3

PREVIOUS ROLES

Senior AI Developer 2025-Present
Physical AI, Vention
Developing cutting-edge solutions enabling robots to autonomously perform complex industrial tasks in unstructured physical environments.

Visiting Researcher, UC Berkeley Summer 2019
Embodied Dexterity Group (EDG) with Prof. Hannah Stuart
Force prediction for underwater dexterous manipulation using recurrent neural networks.

Research Assistant Spring 2019
Command and Robotics Laboratory (CoRo) with Prof. Vincent Duchaine
Simulation for contact-rich manipulation tasks and model-based reinforcement learning.

Biofeedback control engineering through machine learning Summer 2018
Imaging and Orthopedics Research Laboratory with Prof. Rachid Aissaoui
Optimized haptic feedback of a wheelchair simulator through reinforcement learning.

Development and operations (DevOps) 2015-2017
Sliq Media Technologies
Development and management of our continuous integration system.

MAJOR AWARDS & SCHOLARSHIPS

NSERC - Canada Graduate Scholarship - Doctoral	(115,000$) 2022-2025
Ontario - Queen Elizabeth II Graduate Scholarship in Science and Technology	(15,000$) 2021
FRQNT - Master's Research Scholarship (Ranked 1st)	(35,000$) 2020
NSERC - Alexander Graham Bell Canada Graduate Scholarship - Master's	(17,500$) 2020
Vector - Vector Scholarship in Artificial Intelligence	(17,500$) 2020
Various - 10 other scholarships and awards	(27,000$) 2018-2020

RECENT PEER-REVIEWED PUBLICATIONS

As first author:

Robustness Assessment of Assemblies in Frictional Contact — Under Review
IEEE Transactions on Automation Science and Engineering 2025

Stable Object Placement Planning From Contact Point Robustness — Published
IEEE Transactions on Robotics 2025

Visual Part Segmentation for Inertial Parameter Identification of Manipulated Objects — Published
IEEE International Conference on Robotics and Automation 2023

Fast Object Inertial Parameter Identification for Collaborative Robots — Published
IEEE International Conference on Robotics and Automation 2022

Tactile sensing based on fingertip suction flow for submerged dexterous manipulation — Published
IEEE International Conference on Robotics and Automation 2020

Others:

Published in *IEEE International Conference on Robotics and Automation 2022*, *IEEE International Conference on Automation Science and Engineering 2021*

TECHNICAL ABILITIES

Robot perception & planning:
- Robot vision (meshing, recognition, registration) with geometrical and learned methods
- Force sensing from joint torque estimates or wrist sensor

Kinematics & Dynamics:
- Rigid-body dynamics (quaternions, kinematics, inertia, equations of motion, screw theory)
- Contact mechanics (friction models, multi-object stability constraints)

Simulation & Optimization:
- Usage of Bullet, NVIDIA PhysX, Gazebo simulators
- Optimization with Pyomo, MOSEK, IPOpt, OSQP, and with learning-based approaches
- Model identification and calibration from sensing data

Others:
- Software development: C++, Python, Bash, Git
- ROS: Experience with MoveIt, ROS drivers package development
- Robots: Experience with Universal Robots, Franka Emika, xArms
- CAD: Experience with Solidworks, OnShape, Solidedge

Look at my online portfolio!

COMMUNICATION

Proficiency in French and English (TOEFL score: 111/120)
Editor for the Canadian Science Fair Journal - Comp. Sci., Math & Physics — 2021-2024
Translator for the Canadian Robotics Council — 2024-2025
Reviewer for the IEEE International Conference on Robotics and Automation, IEEE Transactions on Robotics, IEEE Robotics and Automation Magazine — *ongoing*

VOLUNTEERING & OUTREACH

Judge for the University of Toronto Robotics Hackathon	2024,2025
Canadian Artificial Intelligence & Robot Vision Conference	2022
Retail & Manufacturing Robotics Workshop	2021
Baccalaureate program development committee	2018-2020
Co-Founder and vice-president of the non-profit "Camp Frontenac"	2016-2021
Co-Founder, **President** of AlTech Fabrication Lab	2013-2014
Scout leader in the 229^{th} group ($\approx$ 400 hours/year)	2011-2018