

# Philippe Nadeau

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## EDUCATION

- PhD in Aerospace Science and Engineering** 2020-2025 (anticipated)  
**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

- 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.
- Robotic Design** Spring 2017  
*Sliq Media Technologies*  
Electronic and software design of a closed-loop automated aquaponic system.
- Development and operations (DevOp)** 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:

<a href="#"><u>Robustness Assessment of Static Structures for Efficient Object Handling</u></a> <i>IEEE Transactions on Robotics 2024</i>	Submitted
<a href="#"><u>Stable Object Placement Planning From Contact Point Robustness</u></a> <i>IEEE Transactions on Robotics 2024</i>	Submitted
<a href="#"><u>Visual Part Segmentation for Inertial Parameter Identification of Manipulated Objects</u></a> <i>IEEE International Conference on Robotics and Automation 2023</i>	Published
<a href="#"><u>Fast Object Inertial Parameter Identification for Collaborative Robots</u></a> <i>IEEE International Conference on Robotics and Automation 2022</i>	Published
<a href="#"><u>Tactile sensing based on fingertip suction flow for submerged dexterous manipulation</u></a> <i>IEEE International Conference on Robotics and Automation 2020</i>	Published

### 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, Google Ceres, 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

**Reviewer** for the IEEE International Conference on Robotics and Automation, *ongoing*  
IEEE Transactions on Robotics, IEEE Robotics and Automation Magazine

## 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
<b>Co-Founder</b> and vice-president of the non-profit "Camp Frontenac"	2016-2021
<b>Co-Founder, President</b> of AlTech Fabrication Lab	2013-2014
<b>Scout leader</b> in the 229 <sup>th</sup> group ( $\approx$ 400 hours/year)	2011-2018