

# RUTHRASH HARI

## CONTACT

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**Website** <https://ruthrash.github.io/>  
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**Status** **Permanent Resident** of Canada. Citizen of India

## FIELD OF INTERESTS

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Robotics, Computer Vision, Planning, Control, Physics Based Simulations, and Software Engineering.

## EDUCATION

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- University of Toronto, St. George, Canada 2018-2020  
MEng., Electrical and Computer Engineering with Emphasis in Robotics  
CGPA: 3.95/4.0
- National Institute of Technology, Tiruchirapalli, India 2014-2018  
B.Tech., Electrical and Electronics Engineering  
CGPA: 8.31/10

## SKILLS

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**Software:** C++, Python, ROS, Gazebo, IsaacSim, PCL, OpenCV, Pytorch, LINUX, Git, Docker  
**Hardware:** NVIDIA Jetson, Raspberry Pi, Arduino/ATMEGA Microcontrollers  
**Robots/Sensors:** [Franka Emika Panda](#), [Race CarJ](#)<sup>1</sup>, [Intel Realsense D415/D435](#), [2D/3D Lidars](#),  
[Pepper](#), [Yujin Kobuki](#), [EV3 Lego Mindstorms Kit](#)

## PROFESSIONAL EXPERIENCE

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- **Robotics Laboratory Engineer** Feb '22-now  
**Institution:** University of Toronto Mississauga, Canada
  - Resident engineer for robotics research and teaching for the robotics group at UTM<sup>2</sup>
  - Create and maintain robot tooling and software setup of 10 Franka Emika Panda arms and 5 RC race cars.
  - Development, test, and maintenance of systems for perception, SLAM, motion control, calibration, and grasping.
- **Robotics Simulation and Software Engineer: Part-time till Dec' 20** May'19-Dec-21  
**Company:** QA Consultants, 4711 Yonge St 15th Floor, Toronto, Canada
  - Automated Software-in-Loop functional testing of Autonomous Navigation Stacks for Mobile Robots using physics-based simulations(Gazebo).
    - **Client:** [Cyberworks Robotics](#), [Crosswing Robotics](#)
  - Automated test route generation for verification of High-Definition(HD) maps.
    - Database creation with concurrent parsing of HD map files of the US state of Michigan.
    - **Client:** [General Motors](#)

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<sup>1</sup>blue text is a link

<sup>2</sup>Website : [robotics\\_group-UTM](#)

## RELEVANT EXPERIENCE & PROJECTS

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- **MEng Project** May'19-Nov'20  
**Guide:** Prof. Alex Mihailidis, Prof. Ofer Levi, IATSL,<sup>3</sup> University of Toronto
  - Face recognition using pre-trained deep features and person position tracking based on tracking-by-detection with Bayesian filters for a semi-humanoid robot- Pepper
  - The robot can detect, recognize, and track people to follow them around to provide ubiquitous assistance and medical care.
- **Student Engineer at aUToronto**<sup>4</sup> Oct'18-Mar'20
  - The main objective of aUToronto is to participate in the 4-year SAE Autodrive challenge
  - Worked as a software engineer for 3D object tracking, simulation, and control teams during my stay at the University of Toronto
- **MPC Path tracking controller for a Mobile Robot**<sup>5</sup> Sep'20  
Udacity Modern C++ [Nanodegree](#)
  - Developed and tested on simulated [Jackal Robot](#)
- **Co-ordination of Multiple Mobile Robots** Jan-Mar'18  
**Guide:** Dr.V.Sankaranarayanan, NIT Trichy, India
  - This project dealt with smooth, collision-free trajectory generation for multiple mobile robots. Developed and tested on LEGO Mindstorms mobile robot.
- **Mobile Robot Development Platform** <sup>6</sup> Jan-Feb '17  
Project done under the aegis of RMI<sup>7</sup>, India
  - This project aims to build from scratch a mobile robotic platform with a ROS framework.
  - Worked as a system engineer to implement ROS Navigation Stack and SLAM modules.
- **Mobile Robotic Testbed, Interfacing Lego EV3 and ROS** May-July '16  
**Guide:** Dr.Bharath Bhikkaji, IIT Madras, India
  - ROS driver interfaces for a mobile robot made of Lego EV3 robot development kit including its actuators and sensors were developed and tested.

## PUBLICATIONS

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- [Geometry Matching for Multi-Embodiment Grasping](#) CoRL 2023  
M. Attarian, M.A. Asif, J. Liu, **Ruthrash Hari**, A. Garg, I. Gilitschenski, J. Tompson
- [Policy-Guided Lazy Search with Feedback for Task and Motion Planning](#) ICRA 2023  
M. Khodeir, A. Sonwane, **Ruthrash Hari**, Florian Shkurti
- [Proactive Robotic Assistance via Theory of Mind](#) IROS 2022  
M. Shvo, **Ruthrash Hari**, Z. O'Reilly, S. Abolore, Sze-Yuh, N. Wang, Sheila A. McIlraith

## TEACHING STAFF/ASSISTANT

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- **CSC496: Medical Robotics and Computer Vision** 2023
- **CSC477: Introduction to Mobile Robotics** 2022, 2023
- **CSC376: Fundamentals of Robotics** 2023, 2022
- **ECE470: Robot Modelling and Control** 2019

<sup>3</sup>Website : [IATSL website](#)

<sup>4</sup>Team Website : [link\\_to\\_website](#)

<sup>5</sup>project code : [link\\_to\\_code](#)

<sup>6</sup>Project description: [link\\_to\\_desc](#)

<sup>7</sup>RMI-([website link](#))Robotics & Machine Intelligence the robotics R&D club of NIT,Trichy