

Luis Guzman

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<https://luisjguzman.com>

SKILLS

Languages: Python, Java, C, C++
Data Science (PyTorch, Tensorflow, Sklearn)
Tools: ROS, OpenCV, Docker, Git, AutoCAD
Structure from Motion, Reinforcement Learning
Shell scripting & Excel Macros

- Enthusiastic robotics graduate student interested in advancing robot perception through computer vision and machine learning methods
- Held multiple prior robotics and automation internships.
- Seeking a full-time position beginning January 2022

EDUCATION

University of Minnesota Twin Cities — Minneapolis, MN Aug. 2020 – Present
M.S. Robotics – Graduating December 2021 4.0 GPA

University of Wisconsin — Madison, WI Aug. 2017 – May 2020
B.S. Applied Mathematics, Engineering, and Physics 3.84 GPA
& Computer Science Certificate Dean's List 3 semesters

RELATED EXPERIENCE

University of Minnesota Aug. 2020 – Present
Minneapolis, MN
Graduate Research Assistant

- Researched deep reinforcement learning methods to develop robotic learning-by-demonstration systems using PyTorch and MuJoCo virtual environments
- Assisted with teaching graduate-level Intro. to Intelligent Robotic Systems course
- Submitted two papers for publication in ICRA and IEEE-RAM

Rover Robotics (Startup) June 2021 – Aug. 2021
Wayzata, MN
Robotics Intern

- Created the company's endurance testing platform by implementing autonomous vision-based navigation on a closed course and monitoring diagnostic data
- Enabled remote monitoring of video and data feeds via custom Nginx web server
- Utilized OpenCV and built cross-platform support for ROS1 and ROS2

Dematic Corp. June 2019 – Aug. 2019
New Berlin, WI
Controls Engineering Intern

- Designed distributed control device networks for automated distribution centers
- Traveled to and participated in commissioning at a customer site (1 month)
- Contributed original code to goods-to-person (GTP) picking stations, servo-driven case elevators, case and pallet conveyor, human-machine interfaces (HMI)

Precision Associates Inc. Summer 2012, 2014–15
Minneapolis, MN
Automation Intern

- Developed an information display to monitor equipment diagnostics
- Programmed a 6-axis robot to pick-and-place on rail with 1mm accuracy
- Collaborated with engineers to develop and deploy product inventory software

FIRST Robotics Team 3630 – Team Mentor & Team Captain Sep. 2013 – April 2017

PUBLICATIONS & RECENT PROJECTS

Robotic Embodiment of Human-Like Motor Skills via Reinforcement Learning (2021) – Submitted to ICRA
Incorporated RL-based control policies with human motion tracking data to augment robotic motor skills

Tumbling Robot Control Using Reinforcement Learning (2021) – Submitted to IEEE-RAM
Used proximal policy optimization to develop a sim-to-real control policy on uncertain terrain

Satellite Image Building Detection using U-Net Convolutional Neural Network (2021)
Implemented a UNet CNN building detector in PyTorch, achieving similar error rates to the competition winners

Egocentric Prediction of Hand-Object Interaction (2020)
Solved novel prediction problem using Mask RCNN object detection and LSTM trajectory forecasting

Waypoint Setting Via Webcam and OpenCV (2020)
Utilized OpenCV and ROS to direct a mobile robot by clicking desired waypoints on a webcam feed

HONORS & AWARDS

Highlighted in the UMN CSE Donor Report (2021)
University of Wisc. "Graduated with Distinction" (2020)
MN Academy of Science STEM Top Ten Paper (2014)
MN Dept. of Education Scholar of Distinction (2014)
BSA Eagle Scout (2014)

Exploravision National Honorable Mention (2014)
3M Inventor Recognition & Renewable Energy Awards (2014)
Timothy Randall & Todd Allan Hitchcock Scholarship (2014)
Breck Science Leadership and Achievement Award (2014)
FIRST Chairman's & Engineering Inspiration awards (2013)