Harrison K. Saperstein

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EDUCATION

Worcester Polytechnic Institute (WPI), Worcester, MA

- Master of Science in Robotics Engineering 2021
- Bachelor of Science in Robotics Engineering 2020
- Key Coursework: Biomedical Robotics; Artificial Intelligence; Robot Controls; Robot Dynamics; Computer Vision; Control Systems; Robotic Manipulation, Sensor Analysis, Navigation; Operating Systems

TECHNICAL SKILLS

Programming Languages: Python, C/C++, QML, Java, MATLAB
ML Frameworks: PyTorch, TensorFlow, OpenCV
Tools & Platforms: ROS, Linux, Jira, Bitbucket, Bamboo, Docker, JAMA, GitHub, Agile SCRUM
Certifications: Lean Six Sigma (DRM Greenbelt)

PROFESSIONAL EXPERIENCE

Medtronic, Boston, MA August 2021 - Present

Senior Software Verification Engineer, Hugo RAS July 2024 - Present

- Architected automated testing frameworks, migrating legacy manual processes to automated pipelines
- Collaborated with systems teams to define testable requirements and subsystem protocols
- Developed Python-based test automation tools, reducing system verification cycles from weeks to days
- Led cross-functional initiatives for system architecture migration and performance optimization
- Mentored engineers on system troubleshooting, automation development, and technical problem-solving

Software Verification Engineer II, Hugo RAS August 2021 - July 2024

- Built comprehensive Automated Test Framework using Python and Squish for real-time verification
- Designed and implemented automation solutions, converting 15+ manual processes to automated systems
- Developed system-in-loop and software-in-loop testing protocols for UX/UI subsystem verification
- Deployed and configured software systems on robotics platforms for development and debugging support

Hubbell Inc., Avon, CT May 2019 - April 2021

Machine Learning Intern, Research and Development

- Developed and deployed real-time computer vision system for object detection in video streams
- Implemented motion detection algorithms using OpenCV and deep learning models with TensorFlow
- Optimized neural network inference for real-time performance using TensorRT GPU acceleration
- Integrated cloud-based data pipeline for training

PROJECT EXPERIENCE

Worcester Polytechnic Institute (WPI)

Exoskeleton Simulation and Modeling

- Developed lower extremity exoskeleton control algorithms for rehabilitation applications
- Implemented torque controller using Deep Reinforcement Learning (Double Q-Learning) in PyTorch
- Simulated dynamic walking gait control to mitigate joint misalignment issues

Simultaneous Localization And Mapping

- Led development of Python ROS nodes for autonomous mapping and navigation
- Implemented path planning algorithms (A*, Dijkstra, Greedy Best First) and Kalman filtering
- Deployed autonomous navigation system for unknown environment exploration

Robotic Arm Manipulation

- Led team developing object sorting system using computer vision and load cells
- Implemented forward/inverse kinematics and trajectory generation algorithms
- Developed high-level control systems in MATLAB for robotic arm coordination