

Tokyo, Japan,

MOSTAFA OTHMAN

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SUMMARY

Highly skilled robotics engineer and machine learning enthusiast, keen on developing and deploying emerging robotic systems for industrial applications. Competent in enhancing and streamlining robot operations, utilizing deep learning and computer vision techniques to increase efficiency and improve performance. Eager to provide innovative solutions to industry-specific issues, furthering technological progress in the robotics domain.

TECHNICAL SKILLS

Robotics: ROS, Docker, Github, Modelling and simulation, Hands-on experience Kuka-iiwa

Design and Prototyping: SOLIDWORKS, LabVIEW, MATLAB, Unity3D, Gazebo, 3D-printing

Programming: Python, C++, TensorFlow, Pybullet, OpenAI Gym

Competitions: Participated in various robotics competitions including ROV, WRO, AirRace, Fighting Robots

Teaching: Taught robotics concepts to junior university students and mentored them in robotics competitions.

EDUCATION

Master's degree, Robotics and Computer Vision

Graduating Jul 2022

Innopolis University, Kazan, Russia

4.5/5 GPA

Relevant coursework: Advanced Robotics, Behavioral and Cognitive Robotics, Dynamics, Machine Learning

Bachelor's degree, Mechatronics Engineering

Graduating Jul 2020

Nile University, Giza, Egypt

Highest Honors 3.71/4 GPA

Relevant coursework: Sensors and actuation, Kinematics, Circuits, Control theory

EXPERIENCE

Rapyuta Robotics, Tokyo, Japan: Robotics Software Engineer

Dec 2022 – present

- Deployed and configured 40+ robots and 30 edge server PCs for production and demos, ensuring smooth operations.
- Facilitated effective communication and coordination across teams, ensuring alignment of goals and requirements.
- Resolved technical issues during robot operations, demonstrating strong troubleshooting skills and timely solutions.
- Led exhibition and trade show deployments of robot systems, overseeing setup, operation, and technical support.
- Supporting both products Autonomous Mobile Robots (Sootballs) and Forklifts over sites across Japan.

Laboratory of Intelligent Robotics Systems, Kazan, Russia: R&D Robotics Engineer

May 2021 – Jul 2021

- Tele-operation of a cable-driven robot 10x7m via Haptic device, enabling precise control and manipulation.
- Established seamless communication between haptic device (C++) and robot's Omron PLC controllers, driving motors and sensors. Implemented websocket protocol for bi-directional data exchange and velocity control.

PROJECTS

Master Project: Tele-operation and Resilient Peg-in-Hole Assembly with Kuka iiwa Robotic Arm Dec 2021 – Jul 2022

Achieved resilient peg-in-hole assembly by combining tele-operation, haptic device, force feedback, shared autonomy.

- Tackled the challenge of assembling cylindrical objects in tight holes, surpassing the robot's accuracy limitations.
- Integrated computer vision techniques and implemented various control methods (full autonomy, bilateral teleportation with force feedback, shared autonomy, imitation learning and learning from demonstrations for knowledge transfer)
- Utilized advanced industrial hardware (Kuka LBR iiwa with ROS) and touch haptic devices for enhanced user interaction, performing a benchmark task with a tight clearance resulting in improved assembly performance with highest accuracy.

Bachelor Project: Tele-operated Virtual Reality Control of a 7-DOF Industrial Robotic Arm

Oct 2019 - Jul 2020

Collaborated in a team of four to control and integrate Robot arm for digital twin, achieving first place in AIOT Egypt challenge

- Designed and built a full Teleoperation system for controlling a 7-DOF industrial robotic arm using Virtual Reality.
- Implemented a novel approach to integrate Virtual Reality with the robotic arm, utilizing forward and inverse kinematics with ROS along with path and trajectory planning. Increasing robot mobility and mapping real and virtual world .
- Utilized Unity software for seamless integration of virtual reality interactions, UI and robot simulation with ROS.

PUBLICATION

Robotic Arm Pick and Assembly Using Deep Learning and Hybrid Vision/Force Control, Innopolis, RU:

Aug 2021

- Published in 2021 IEEE International Conference "Nonlinearity, Information and Robotics" NIR Paper