Yael Ben Shalom

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EDUCATION

MS in Robotics, Northwestern University, IL, USA ***Sep 2020 - Dec 2021 (Expected)***

- Featured courses – Machine Learning, AI, Robotics Manipulation, Embedded Systems, Image processing. Current GPA – 3.9.

BS in Mechanical Engineering, Tel-Aviv University, Tel-Aviv, Israel ***Sep 2014 - Jul 2018***

- Majored in Robotics and Autonomous Systems – Dynamics, Mechatronics, and Control.

PROFESSIONAL EXPERIENCE

Robotics Software Engineer Intern, Augean Robotics (Burro) ***Jun 2021 - Sep 2021***

- Developed several key features for Burro's autonomy stack, including pushing toward generalizable vision-based autonomy outside of Burro's core uses.
- Implemented real-time obstacle avoidance and path following recovery method, using reinforcement learning algorithms.

Mechanical Engineer, R&D Department, Elbit Systems ***Jun 2016 - Jul 2020***

- Designed the electrical packaging of 5 electro-optic systems in core $4M products, with 70+ units each.
- Conducted heat dissipation and structural integrity simulations of parts, mechanisms, PCBs, and experimental equipment.
- Led three award-winning mechanical concepts; Each received a $250K grant from the Israeli Chief Scientist.
- Initiated a study to reduce manufacturing time and costs of 3D-printed products; Reduced 3D-printed prototype costs by 50% by introducing new materials, increasing printers' utilization, and optimizing printing requirements.
- Formulated my department's training program for incoming engineering interns and mentored three trainees.

Project Manager, Intelligence Corps Technological Unit, Israel Defense Forces ***Nov 2012 - May 2013***

- Coordinated a cross-functional project team of 100+ people from defining requirements to product launch under a tight schedule.
- Received Colonel's Award for Outstanding Performance and Leadership.

Electronics Technician, Intelligence Corps Technological Unit, Israel Defense Forces ***Nov 2010 - Nov 2012***

- Served as a team leader's expert on electro-optic systems manufacturing.
- Specialized in research, development, manufacturing, quality assurance (QA), and integration of electro-optic systems.

SELECTED PROJECTS **Portfolio: https://yaelbenshalom.github.io**

Recycling Robot with Machine Learning and Computer Vision Perception – Northwestern University

Robotic Manipulation, Machine Learning, Motion Planning, Computer Vision, Image processing, Range Imaging, ROS, Python

- Programmed and controlled a Baxter robot to accurately pick and place a mixture of objects into different recycle bins, with more than 95% accuracy. Used inverse kinematics, MoveIt motion planning framework, and machine-learning-based classifier.
- Created a machine-learning-based trash classification and segmentation software to recognize, classify, and localize more than 60 recyclable object types in a real-time image.

Motorized Prosthetic Elbow – Northwestern University

Rehabilitation Robotics, Medical Devices, Mechatronics, Feedback Control Systems, PCB Design, Mechanical Design, Solidworks, C

- Designed, built, and controlled a motorized prosthetic elbow that imitates healthy arm motion to help amputees prevent falling, avoid injuries, and maintain balance while walking.
- Defined precise system requirements by analyzing dozens of arm movement data patterns and simulating full arm dynamics.

Robot Navigation and Control inside a Maze – Tel-Aviv University

Autonomous Vehicle, AI, SLAM, Mechatronics, Motion Planning, Path Planning, Arduino, C++

- Built a wheeled robot and coded it to navigate autonomously through an obstacle course using an embedded microprocessor, motors, and distance sensors (IR, TOF, and ultrasonic); Applied real-time adaptive motion control.

Robotic Manipulation and Motion Planning Projects – Tel-Aviv University

Robotic Manipulation, Motion Planning, Path Planning, Feedback Control Systems, Python, Matlab, Simulink

- Programmed a robotic arm (Denso VP-G Series and WincapsIII simulator) to pick up multi-shape objects, recognize different elastic surfaces, and write words, utilizing forward and inverse kinematics and PID closed-loop control.

SKILLS & ADDITIONAL INFORMATION

- Programming: Python, C, C++, Matlab, HTML, CSS, JavaScript, Simulink, Git, Linux.
- Robotics: Robot Operation System (ROS), TensorFlow, Pytorch, OpenCV, MoveIt, Gazebo, Rviz, CoppeliaSim, Arduino.
- Mechanical Engineering: Solidworks, Altair Inspire, Ansys, CFdesign, Solidworks Visualize, 3D printing.
- Electrical Engineering: Eagle, PCB manufacturing, soldering.
- Volunteered as a mentor in Cracking the Glass Ceiling, empowered underprivileged young women to pursue STEM education.