# Yael Ben Shalom

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## EDUCATION

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

- Featured courses – Machine Learning, Robotics Manipulation, Embedded Systems, Dynamics, and Mechatronics.

***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

***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 100+ units each.
- Conducted heat dissipation and structural integrity simulations of parts, mechanisms, PCBs, and experimental equipment.
- Developed 3 award-winning mechanical concepts, that 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's costs by 50% by introducing new materials, increasing printers' utilization, and optimizing printing requirements.
- Formulated the department's training program for incoming engineering interns, and mentored 3 trainees.

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

- Managed a full product development life-cycle from research to delivery in a tight schedule.
- Coordinated a cross-functional team of 100+ people from 7 different disciplines to complete the mission.
- Received the Department Manager's Award (Colonel) for Outstanding Performance and Leadership.

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

- Served as the team-leader's expert on electro-optic systems manufacturing.
- Specialized in research, development, manufacturing, and integration of electro-optic systems.
- Performed quality assurance (QA) and hardware testing, circuit board manufacturing, and soldering.

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

***Baxter Recycling Robot Using Computer Vision Perception – Northwestern University***

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

- Developed a computer vision trash-classification software, which uses a D435i depth-camera and the OpenCV library to recognize, classify, and find the location of various recyclable objects in a real-time image.
- Programmed and controlled a Baxter robot to accurately grasp the different objects and throw them into the appropriate recycle-bin, using inverse kinematics and MoveIt motion planning framework.

***Rapidly-Exploring Random Tree (RRT) – Northwestern University***

*Randomized Algorithms, AI, Path planning, Python*

- Implemented an artificial intelligence RRT path-planning algorithm for constrained movement and obstacle avoidance.
- Coded exploration algorithms for both 2D and 3D spaces with randomly sized and shaped obstacles.

***Robot Navigation and Control inside a Maze, Mechatronics Project – Tel-Aviv University***

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

- Built a wheeled robot and programmed 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, using forward and inverse kinematics and PID closed-loop control.

## SKILLS & ADDITIONAL INFORMATION

- Programming: Python, C++, Matlab, Simulink, Git, Linux.
- Robotics: Robot Operation System (ROS), OpenCV, MoveIt, Gazebo, Rviz, Arduino.
- Mechanical Engineering: Solidworks, Altair Inspire, Ansys, CFDesign, Solidworks Visualize, 3D-printing.
- Electrical Engineering: QA and hardware testing, circuit boards manufacturing, soldering.
- Mentor for "Cracking the Glass Ceiling", empowering underprivileged young women to pursue science education.