

# Jeffrey Costello

Mechanical engineer with extensive, hands-on, in-field experience designing, fabricating, and validating electromechanical systems, especially systems related to desalination and drip-irrigation.

## Contact

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LinkedIn

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Portfolio

[jeffcostello.weebly.com](http://jeffcostello.weebly.com)

## Education

MS Mechanical Engineering  
Massachusetts Institute of Technology  
2022 - August 2024, Anticipated

BS Mechanical Engineering  
Boston University, 2013 - May 2017

## Skills

### Computer-Aided Design

Solidworks, Onshape, PTC Creo

### Computer-Aided Manufacturing

GibbsCAM, HSM Express

### Programming

Python, Linux (Ubuntu, Raspian), Ladder, Raspberry Pi, HTML/CSS/Javascript, SQL

### Industrial Automation

Rockwell RSLogix 5000, Universal Robots, Teledyne-Dalsa Vision Systems

### Manufacturing

Wire EDM, 3-Axis CNC Milling, 2-Axis CNC Turning, Manual Turning, Manual Milling, FDM and SLA 3D Printing

### Computing

MS Office, Google Workspace, Overleaf

### System Integration

CAN, MQTT, RS232/RS485 Serial, Modbus, Relay Logic

## Interests

Home Automation, Network Infrastructure, Raspberry Pi, IoT, 3D Printing

## Professional Experience

**MIT Global Engineering and Research (GEAR) Lab** - [www.gear.mit.edu](http://www.gear.mit.edu)

**Research Assistant (Graduate Student)**, September 2022 - Present

**Technical Associate II**, October 2021 - September 2022

**Research Specialist**, January 2018 - September 2019

- Conducted research on a novel energy-recovery device for small-scale, decentralized, reverse-osmosis desalination systems
- Successfully debugged and commissioned an electrodialysis (ED) desalination for the Gaza Strip sponsored by UNICEF and USAID. All work was performed abroad in Israel
- Designed and deployed critical electrical, hydraulic, and software subsystems in a field pilot to study novel power allocation for off-grid, solar-powered, ED desalination systems
- Created a detailed 3D design for the hydraulics and steel frame for a prototype, commercial, village-scale ED desalination system successfully deployed in India
- Contributed to the design, manufacture, and experimental analysis of novel prototypes for inline drip-irrigation emitters
- Contributed to the planning and execution of field trials in Jordan, Morocco, and New Mexico for both desalination and drip-irrigation
- Delivered a 25-minute presentation at the the Brackish Groundwater National Desalination Research Facility in New Mexico on the design and implementation of novel desalination systems including comparisons to existing ED and Reverse-Osmosis technology

**Boston University Engineering Product Innovation Center (EPIC)** -

[www.bu.edu/epic](http://www.bu.edu/epic), **Laboratory Supervisor**, September 2019 - October 2021

- Wrote and conducted nine laboratory exercises for the course "ME345: Automation and Manufacturing Methods" covering collaborative robotics, computer vision, programmable logic controllers, CNC manufacturing, and system integration. Instructed 28 students per semester.
- Designed, developed, managed, and documented a full-stack web-application for the integration and automation of all autonomous systems in the Automated Design and Manufacturing Laboratory allowing students to program, operate, and collect data from a fully-autonomous manufacturing cell
- Instructed, trained, and supervised students on the operation of manual and CNC manufacturing equipment including milling machines, lathes, wire EDM, laser cutters, basic power tools, and basic hand tools. Over 1000 students per semester used the EPIC facility for coursework, clubs, research, and personal projects

**Chant Engineering Company, Inc.** - [www.chantengineering.com](http://www.chantengineering.com)

**Mechanical Engineer**, June 2017 - December 2017

- Designed test equipment for the validation and certification of high-pressure fracking equipment
- Project management, engineering math, mechanical design, and drafting for two 22'W X 18'D X 10.5'H hydrostatic test chambers