

# Dimitrios Chamzas

Robotics Engineer (U.S. Citizen)

Robotic Projects Portfolio: [jimas95.github.io/portfolio](https://jimas95.github.io/portfolio)



[github.com/jimas95](https://github.com/jimas95)



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## EDUCATION

### Northwestern University →

Sep. 2020 - Dec. 2021

MS in Robotics, GPA 3.95/4.0

### University of Patras

Oct. 2013 - Oct. 2019

Diploma (Bs & Ms.) in Electrical and Computer Engineering

## SKILLS

**Programming Languages:** C++, C, Python, Matlab, Bash, Java

**Robotics Software:** ROS, MoveIt, Gazebo, CoppeliaSim, URDF/Xacro

**Robotics:** Obstacle Avoidance, SLAM, Path Planning, Vision, Testing, Perception

**Operating Systems:** Linux, Android, Windows

**Embedded Microcontrollers:** Arduino, Raspberry Pi, PIC32, Teensy

**Software Development:** PyTorch, OpenCV, UNITY, Git, Cmake, unit testing

**Interests:** Sailing, Climbing, First Aid responder, Volunteer Firefighter, Water-Polo

## PUBLICATIONS → & AWARDS

**3D Augmented Reality Tangible User Interface using Commodity Hardware**, D. Chamzas, K. Moustakas, *GRAPP*, 2020,

**cMinMax: A Fast Algorithm to Find the Corners of an N-dimensional Convex Polytope**, D. Chamzas, C. Chamzas, K. Moustakas, *GRAPP*, 2021

**1st place, Line Following Enhanced Robotex 2018**, Tallinn Estonia

**2nd place, Line Following Robotex 2017**, Tallinn Estonia

**1st place, Regatta Sail 2016,2017,2018,2019**

## OTHER

Professional Engineer License, Greece, 2020

First Aid Responder Diploma, Greece, 2016

## LANGUAGES

Greek - Native, English - Fluent

## EXPERIENCE

### Robotics Software Engineer — Robotic Research →

May. 2022, Clarksburg MD

- Design algorithms for ADAS with a focus on emergency braking and collision detection
- Authored a centralized data collection library in C++, addressing disk space issues

### Robotics Software Engineer Intern — Vecna Robotics →

Jun. 2021 - Aug. 2021, Boston MA

- Integrated a new warehouse robot in gazebo simulation.
- Implemented perception and planning capabilities through URDF modeling
- Calculated the ground truth position using landmark detection and triangulation

### Robotics Hardware Engineer Intern — Athena Research Center →

Aug. 2019 - Oct. 2019 and Aug. 2015 - Oct. 2015, Xanthi, Greece

- Designed multispectral camera system with I2C communication for 8 Raspberry Pi
- Designed a 3D-printed mounting device for a quadcopter for vibration reduction

### Computer Vision Software Engineer Intern — Irida Labs Center →

Jun. 2017 - Sep. 2017, Patra Greece

- Worked on a monocular visual SLAM algorithm for navigation with OpenCV, C++

### Robotics Software Engineer Member — Robotics Club UPatras →

Sep. 2016 - Jun 2019, Patra Greece

- Implemented maze solving, localization, sensors linearization, and communication algorithms in C for a high-speed miniature robot in a micro mouse competition
- Implemented a PID controller, and sensor calibration for a line following robot
- Wrote a Java simulator for emulating different mazes, sensors, and planning
- Developed visualization tools for online diagnostics and debugging.

## PROJECTS

### Mobile 3D Printer Construction Robot — Python →

- Designed a heating bed for disposable materials suited for 3D printing constructions
- Achieved robustness and repeatability of navigation for accurate printing
- Developed an automatic refueling procedure with a 4-DOF robotic arm

### Mobile Manipulator (Sawyer & Ridgeback) — Python/C++ →

- Deployed a mobile robot with Omni wheels that navigated between locations
- Opened drawer and performed a pick and place task with MoveIt
- Utilized RGBD cameras and lidar sensors for SLAM, collision, and object detection

### Navigation Stack For TurtleBot3 — C++

- Implemented a landmark-based EKF-SLAM with unsupervised learning in ROS.
- Developed C++ libraries for differential drive kinematics, and unit ROS testing

### Baxter Cup Stacking — Python →

- Led a team of 4 engineers to program a bimanual robot cup-stacking system
- Achieved successful stacking of up to 10 cups in 5 floors
- Combined MoveIt and April tags for collision-free manipulation and detection.
- Created a supporting Gazebo simulation for rapid development and debugging

### Swarm Robotics Simulation — Matlab →

- Coded an optimal reciprocal collision avoidance algorithm
- Simulated over 50 robots in real-time utilizing parallel processing