Ali Ekin Gurgen

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Education

Princeton University, Princeton, NJ *2017 - 2021*
B.S.E. in Mechanical & Aerospace Engineering, GPA: 3.75/4.00
Certificates: Applications of Computing, Robotics & Intelligent Systems, Statistics & Machine Learning

- Princeton Robotics Club (Member): Build autonomous mobile robots and drones to participate in intercollegiate competitions. Won first prize in Micromouse Competition 2019 against teams from Harvard, Brown, Rutgers, etc.
- Turkish Student Association (President): Organize events for the Turkish community at Princeton.

American Robert College, Istanbul, Turkey *2012 - 2017*
High School Diploma, GPA: 96.28/100

- Koç Family Outstanding Success Award, Alfred Friendly Scholarship, National High Honors

Work Experience

Software Engineering Intern (Autonomous Vehicles) *Jun 2020 - Present*
Ford Motor Company - Istanbul, Turkey

- Work as the principal full-stack developer to create a web-based Human-Machine Interface for L4 autonomous trucks.
- Write JavaScript libraries to read and convert raw autonomous driving data from ROS into the XVIZ protocol.
- Develop a web app that lets drivers visualize and interact with autonomous vehicle data, utilizing React and WebGL.

Robotics Engineering Intern *January 2020*
Samsung AI Research Center - New York, NY

- Collaborated with 2 other interns on a project to control a 7-DOF robotic arm that can autonomously hook rings.
- Conducted research on vision-based robotic manipulation methods for novel circular objects, performed inverse kinematics calculations, and utilized an RGB-D camera and Dynamixel motors for actuating the manipulation task.

Physics Tutor *Feb 2019 - Present*
McGraw Center at Princeton University, Princeton, New Jersey

- Conduct group tutoring sessions (~15 tutees/week) for Princeton students in introductory physics classes in mechanics (PHY 103) and electromagnetism (PHY 104).

Research Experience

Robotics Research Assistant *Oct 2019 - Present*
Intelligent Robot Motion Lab at Princeton University - Princeton, NJ

- Investigate applications of computer vision and machine learning in providing end-to-end solutions to the mobile robot navigation problem in Prof. Anirudha Majumdar's research lab.
- Implemented a PyBullet simulation of an UGV in an obstacle dense environment, designed and conducted a dataset collection procedure to collect more than 50,000 RGB-D images to be used for training.
- Designed, trained and validated a neural-network-based motion planner that uses the input from an onboard FPV camera to predict a sequence of control inputs that result in collision-free paths, using PyTorch for deep learning.

Biomechanics Research Assistant *May 2019 - Jun 2019*
Princeton University - Princeton, NJ

- Investigated the mechanical tunability of thin elastomer membranes on liquid substrates upon applied compression, being advised Prof. Andrej Košmrlj. Conducted various compression tests using an Instron testing machine and analyzed the results in MATLAB.

Summer Research Student *Jul 2016 - Aug 2016*
Pioneer Academics, Remote

- Investigated mathematical modeling of discretized configuration spaces, being advised by Prof. Aaron Abrams.
- Studied novel examples from the Braid Theory and their relationships with configuration spaces of points. Proposed potential applications of discretized configuration spaces in coordination and cooperation of autonomous gadgets.

Skills

Programming Lang.	ML / Computer Vision	Full-Stack Web Dev.	Hardware	Spoken Languages
• C/C++	• PyTorch	• React, NodeJS	• CAD/CAM	• Turkish (Native)
• Python	• TensorFlow	• HTML, CSS	• Machining	• English (Fluent)
• Java	• OpenCV	• PyQt, Flask	• 3D Printing	• German (Novice)
• JavaScript	• AWS	• SQL	• Laser Cutting	
• MATLAB	• PyBullet			