SOTA MARK OGATA

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EDUCATION

UC Berkeley, Class of 2025

- Majoring in Mathematics and Computer Science
- GPA 4.0

Princeton University High School Program, 2021/22

- Mathematics and Japanese

Princeton High School, Class of 2022

INTERNSHIPS

Nobias Theraputics

Summer 2023 — Mountain View, California

Drug Embedding NN Using Topological Data Analysis and GNN embeddings to detect Cryptic pockets of proteins

Princeton University Electric Speedboating

Summer 2022 — Princeton, New Jersey

Wrote the firmware controlling the drive by wire system and acceleration of an autonomous speedboat. Manufactured the waterproof encasing for control electronics.

KIT - Karlsruhe Institute of Technology

Summer 2021 — Karlsruhe, Germany

Trained a Convolutional Neural Network to convert RGB images to depth maps, then constructed an autonomous RC car that navigates indoors and outdoors using only a single camera instead of expensive 3D LiDARs. Presented my findings to researchers at KIT.

Daisen Denshi Kogyo

Summer 2019 — Osaka, Japan

Daisen designs, manufactures and sells electronic products including educational robot kits. I assembled and packaged robots for export to Singapore, helped translate and serve foreign customers in the store.

SKILLS

C++/Java/Python/PyTorch/TensorFlow/SQL
Printed Circuit Board Design (Eagle, KiCad, and Altium)
3D CAD Design (Onshape)

LANGUAGES

English
Japanese
Mandarin Chinese
German

EXPERIENCE

Rocketry

Launched a *Liquid Bi-Propellant Rocket* with Space Enterprise at Berkeley. Fixed electronic regulator PCBs (for regulating fuel and oxygen flow) and Ethernet communication on the test cart in C++.

Arbitrage

Built and Deployed an *Arbitration* algorithm on SOL between multiple exchanges including BinanceUS, KuCoin, and Probit using cctx.

Robotics

Built and programmed soccer robots to compete in various RoboCupJunior leagues between 2018-2022 (C++).

Founded and established *Princeton Soccer Robots*, a club with members from several high schools in New Jersey and beyond; The club Won 2nd in the International RoboCup competition in 2023.

Presented at public events, including *RoboCup Symposium* 2021 (virtual) and 2022 (Bangkok), various *Maker Faires*

Product Design

Designed a circuit board and wrote a complete firmware library for a local company for commercialization as an educational robotics kit. (C++)

Created a custom carbon fiber electric skateboard with custom battery,

Building a 3d printed bi-propellant vortex rocket engine (to be completed in April 2024)

AWARDS

International

- **Best Poster Award** - RoboCup Worldwide 2022, RoboCupJunior Soccer Open League
- **7th Place** - RoboCupJunior 2022, Soccer Open World RoboCup
- **Best Video Award** - RoboCup Worldwide 2021, RoboCupJunior Soccer Lightweight League
  Awarded by the international RoboCup Federation
- **Third Place** - RoboCupJunior 2021, Soccer Simulation Super Regional, Americas

National

- **First Place** - US RoboCupJunior 2022, Soccer Open League
- **First Place** - US RoboCupJunior 2021, Soccer Lightweight League
- **First Place** - US RoboCupJunior 2019, Soccer Lightweight League
- **Judge's Award for Best Teamwork** - US RoboCupJunior 2019, Soccer Lightweight League
  All 3 RCJ awards above awarded by RoboCupJunior USA
- **Best Image Processing Award** - MSEC Robot Design Competition, 2020
  Awarded by Mercer Science and Engineering Club

Regional

Science & Engineering Fairs

- **Second Overall Runner-Up & Category Winner, Engineering** - Mercer Science and Engineering Fair, 2021
- **Yale Science & Engineering Association Fair Award, Naval Science Award, Air Force Research Laboratory Award** - Mercer Science and Engineering Fair, 2021

Hackathons

- **First Place** - 2021 HackTCNJ at The College of New Jersey
- **Second Place** - 2020 HackPHS at Princeton High School
- **Third Place** - 2021 HackPHS at Princeton High School

PUBLICATIONS

[not peer reviewed]

- RoboCup 2022 Worldwide - Invited Speaker & Best Poster Award.
  Poster: https://drive.google.com/file/d/1emEfwXLS5n6g16z6DUGnz8gLUFfxLsoF/view
- RoboCup 2021 Worldwide - Invited Speaker & Best Video Award.
  Technical Paper: https://robocupjuniortc.github.io/soccer-2021/pdfs/TDPs/LWL_Orion.pdf
  Team Video: https://youtu.be/EiC6TM8G3RY
- Zircon - An affordable, powerful and customizable educational soccer robot kit for beginners. MSEF 2021.
  Project Page: https://mercersec.org/fair/projects/project/351
  Presentation: https://www.youtube.com/watch?v=kLhqv_1LtT4
  Interview: https://www.youtube.com/watch?v=7KKpEA2rnNA
- 2020 MSEF Robot Design Competition.
  Poster: https://mercersec.org/fair/projects/project/221
- Team Orion Poster, RoboCupJunior Virtual Poster Session 2020:
  https://drive.google.com/file/d/1M7b4wIlohBMcxkwu0EaKUdKX8tNFe9nv