Edward Ju

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• U.S. Citizen 🏠 1200 E California BLVD MSC 531

EDUCATION

- **California Institute of Technology (Class of 2027)**
  - Computer Science Major (Learning & Vision Track) + Robotics and Aerospace Minor (4.1 GPA)
- **University of Guam (2022.08~2023.05)**
  - Dual enrollment in high school (4.00 GPA)
- **Stanford Pre-Collegiate Studies University-Level Online Math & Physics (2022.06~2022.12)**
- **Johns Hopkins Center for Talented Youth (2022.08~2023.04)**

PROJECTS

- **CHARIOT (Cooperative Heterogeneous Autonomous Robots for Intra-Crater Operations and Transport) System Engineer, Adaptive Landing Gear Team Software Lead**
  - Working on autonomy design and development for flying and hopping robots that could land in slanted slopes and integration with modification of patented system (LATTICE project done at Caltech)
  - Developing Computer Vision based elevation mapping and localization for optimal landing (ROS, Ubuntu, Jetson Nano, RealSense + Zed 2 Camera)
- **Caltech Air and Outer Space CRATER (Caltech Rover Autonomy, Technology, and Exploration Research) Software Engineering Team**
  - Working on the CRATER rover wheel system
  - Planned to participate in the University Rover Challenge
- **NASA Big Idea Challenge Finalist (2024 Inflatable Challenge Caltech Team)**
  - Working on developing system using inflatable technology for plume alleviation on lunar surfaces (Plume-deployed Inflatable for Launch and Landing Abrasive Regolith Shielding), Awarded $150,000 to develop and test the system
- **Caltech Numerai**
  - Developing the machine learning model that can be used by the hedge fund to predict the stock price (Sponsored by Numerai)

WORK EXPERIENCE

- **UAV / ML Research @ Cyber-Physical Systems Lab, Duke University (2024.08 ~ 2024.09)**
  - Developing robust particle filter for localization of UGV and UAV
  - Designed mounts and built drones for radar-based point-cloud mapping, localization, and

navigation (Also worked with swarm drone models)
- **NASA Space Grant Research Intern (2024.07~Present)**
  - Working with Machine Learning Algorithms to analyze orthomosaic datasets gathered with fluid lensing technology and remote pilot drones
  - Working with NASA Guam Space Grant & NASA Guam EPSCoR
- **REU @ Duke Athena AI Institute (NSF AI Institute for Edge Computing Leveraging Next Generation Networks) (2024.06~08)**
  - Worked with mmWave radar to develop black-box real time automotive radar attack framework (Attacks tested on automobiles and automotive radars)
  - Implemented a microcontroller and Raspberry Pi-based function generator emulator for time synchronization and radar triggering
- **Research Assistant @ University of Guam (Research funded by Mathematical Association of America) (2022.05~07)**
  - Research on "An Error-Correcting Magic Trick using the 9 Element Field"
  - Worked with undergraduate students and faculty working under NSF & NASA Space Grant (Other sponsors for this research)
  - Presented on public and conference
- **Research @ Kyonggi University (2021.06~07, 2022.01)**
  - Research on the project "Development of Low-Cost Transparent and Flexible Hydroxypropyl Cellulose Display"
  - 1st place on 2022 Guam Island wide Science Fair high school division (Physical Science and Math category)
- **Internship @ Advanced Institute of Convergence Technology, Seoul National University (2020.11~12)**
  - Learned method for the detecting and analyzing the moving object using optical flow and time-to-collision model

DISTINCTIONS

- Google Code Jam Round 2 Qualifier
- American Invitational Mathematical Examination (AIME) Qualifier (x2)
- Facebook Hacker Cup Round 2 Qualifier (x2)
- NASA Big Idea Challenge Finalist
- Stanford Math Tournament International Honorable Mention
- Berkeley Math Tournament Distinguished Honorable Mention (26th Individual Round)
- Georgia Tech High School Math Competition 4th place (National)
- Asia Pacific Conference of Young Scientists 1st place Poster Presentation (Gold) / 2nd place Oral Presentation (Silver)
- Canadian Open Mathematics Challenge Top 97% (Performance with Distinction)
- University of Guam's 12th Annual Math Day Competition 1st place (Perfect Score)
- 44th Guam Island Wide Science Fair 1st place (Math and Physical Science Division)
- International Youth Math Challenge National Award / Silver Award
- Korean Olympiad of Informatics Honorable Mentions

- Nexon Youth Programming Competition (NYPC) Round 2 Qualifier
- USA Computing Olympiad Silver
- Math Kangaroo State Winner / National Rank: 17
- AP Scholar with Distinction
- University of Central Florida Programming Competition 7th place (Division 2)
- St. John's School Math Award (Given to 1 student)

PROGRAMS/COMPETITIONS

- **Jane Street FTTP**
    - Invited to participate in a selective program (<120 students) to learn about Jane Street trading and technology. (Expenses fully covered)
    - 1st in Electronic Trading Challenge (Round 1), Estimation competition winner
- **SIG Freshman Discovery Day**
    - Introduced to quantitative trading and about trading at SIG
- **Caltech ICPC Team**
    - Represented Caltech ICPC team
- **SoCal College Poker Tournament, Caltech IPA Representative, Traders at Michigan Poker Tournament (Final 2 Table)**

SKILLS

- **C++, Java, Python, HTML, CSS, JavaScript, LATEX, Machine Learning, Data Analysis, Robotics, Algorithms, Competitive Programming, CAD, System Engineering, ROS 1&2, Radar, mmWave, UAV**

PUBLICATIONS

- Edward Ju, "Development of Transparent and Flexible Hydroxypropyl Cellulose Display", **Columbia Junior Science Journal**, *Published*, 2023.

CONFERENCES

- University of Guam, College of Natural & Applied Sciences (CNAS) STEM Conference, *An Error-Correcting Magic Trick using the 9 Element Field* (2023)
- International Mathematics and Statistics Student Research Symposium, *Use of Finite Field to Develop an Error-Correcting Magic Trick* (2023)