

Contact

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Email

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Address

Sunnyvale, California

Education

Current Junior, 11th grade

Class of 2027

Homestead High School

Technical Skills

Programming:

- Java
- Python
- C++
- Javascript
- HTML

Electrical:

- Microcontrollers (Arduino)
- IR communication
- Motor control systems
- Basic circuit design

Design tools:

- KiCad
- Fusion 350

Other:

- Team-based environments
- group coordination
- iterative design

Languages

- English
- Arabic

Hobbies

- Coding
- 3D Modeling
- Karate
- Art Channel

Mariam Abu-Rahma

Electrical Engineering

Personal Profile

- STEM focused high school junior with experience in AI/health research, hands-on engineering projects, and robotics. Strong communication skills in team environments; mentored young students in STEM workshops and karate coaching. Seeking internships and research opportunities in electrical engineering, AI, hardware engineering, or health technology.

Education

- AP Exams (Scored 5): AP Computer Science Principles, AP Computer Science A, AP Psychology, and AP Precalculus
- Current Coursework: AP Chemistry, AP Physics 1, and AP Calculus BC
- Honors Coursework: Photoshop, Architecture, and English
- College Coursework (A grades): Java, Python, JavaScript/HTML, C++ (UCLA), and 3D manufacturing and design
- 4.0 Unweighted GPA
- 4.47 Weighted GPA
- 4× Homestead Green and White Awards

Technical Projects

- MIT BeaverWorks (Autonomous Systems / Robotics)
 - Programmed an autonomous car using line-following and computer vision systems through OpenCV and HSV to detect lines and color markers
 - Developed closed-loop steering controller commands to convert lateral errors for the contour center of markers into steering angle commands with clamping functionalities
 - Designed a timed queue machine system for reliable turning sequences
 - Used remapping and error algorithms to control speed around corners and improve stability
 - Strengthened team coordination skills; earned 2nd place overall and Academic Achievement recognition award
- AlxKumite (In progress)
 - Developing an AI-based video analysis tool to detect karate techniques and extract performance data
 - Integrating computer vision and algorithms for data analysis techniques using pose detection and estimation
- Arduino IR Wand + LED Control System:
 - Designed and built an infrared LED device using microcontroller logic
 - Integrated hardware circuits and software signal processing
 - Working on modeling the circuit into a custom PCB

Research Experience

- Basys.ai: AI in Healthcare Intern (2 months):
 - Researched LLM processes and worked on improving AI agents for analyzing patient medical records
 - Studied hallucination risks in medical AI systems and the effect of data quality on influence
 - Collaborated with a team of 5-10 interns through daily meetings, frequent progress updates, and feedback
- COVID-19 Research Study (Published)
 - Co-led multi-continent survey-based research study based on behavioral hygienic practices
 - Contributed to data collection and writing
 - Published in *Journal of Emerging Investigators*

Leadership & Teaching

- USA Karate National Team Athlete (5+ years; ranked #2 globally)
- International Medalist (Mexico K1 Gold & Silver; Pan American Bronze)
- Designed and Led International STEAM workshop in a community with limited STEM exposure
- Karate Instructor mentoring young athlete
- Instructor for English serving underrepresented students
- Event Coordinator, MSA Club