Karl Anthony Parks

Software Engineer at Boston Dynamics

kheirlbparks@gmail.com linkedin.com/in/karlparks karlparks.com github.com/Kheirlb/

EDUCATION

San Diego State University (SDSU), CA — December 2019
Bachelor of Science in Aerospace Engineering — GPA: 3.5/4.0

- Minor in Computer Science

INDUSTRY EXPERIENCE

Boston Dynamics, Waltham MA (Mar 2020 - Present)
(Creates Robots with Advanced Mobility, Dexterity and Intelligence including Spot®, Atlas, and Stretch)

- Software Engineer (Mar 2022 - Present)
  - Develop software for a new mapping user interface to register Spot point-cloud maps with 2d drawing sheets for enhanced visual awareness of Spot operation.
  - Developed software for a new autonomous thermal inspection process with Spot. Included as inventor in provisional patent (Application Number: 63354863).
- Field Application Engineer (Mar 2020 - Mar 2022)
  - Supported customers in deploying Spot into Nuclear, Aerospace, and Construction industries.
  - Collected, reviewed, and delivered actionable feedback to improve Spot's abilities in various environments ranging from low-level locomotion to advanced autonomous behaviors.
  - Developed software and prototype hardware for multiple new sensor integrations including radiation survey meters, GNSS, LiDAR, 360 cameras, and new compute platforms.
  - Assisted MIT graduate students using Spot for MIT's Resource Exploration and Science of our Cosmic Environment (RESOURCE) project.

Parabilis Space Technologies, San Marcos CA (Jun 2018 - Feb 2020)
(Designs, Develops, Tests, and Flies Affordable Propulsion, Launch Vehicles, and Spacecraft/Small Satellite Solutions)

- Engineering Intern
  - Developed a National Instrument based DAQ system for strain gauge measurement and data logging.
  - Built test site electrical and networking infrastructure to remotely operate an electropneumatic actuator.
  - Created a throttleable valve with custom code for a high-torque servo motor and PID controller.
  - Gained experience with PTC Creo parts/assemblies/drawings by designing fluid fittings and structures.
  - Designed and constructed a new hybrid rocket motor test stand in less than 3 months.
  - Developed custom software for low-cost infrared thermal imaging FLIR camera for hot fire testing.
  - Performed inexpensive tensile tests of RTV bond strength between unique rocket motor materials.

San Diego Composites, CA (Jun 2017 - Oct 2017)
(Produces Materials and Structures for the Aerospace and Defense Community)

- Engineering Intern
  - Developed vacuum panel mount fitting system for Dream Chaser Cargo Module Tool.
  - Improved and structured inventory database for the largest program on site.
  - Trained in engineering practices such as writing work instructions and engineering change notices.

ACADEMIC EXPERIENCE

SDSU Rocket Project, CA (Aug 2015 - Feb 2020)
(Student Team that Designs, Fabricates, and Launches Liquid and Solid Rockets)

- Senior Engineer/Advisor (May 2018 - Feb 2020)
  - Launched record-breaking liquid bi-propellant LOX/LCH4 rocket to an altitude of 13,205 feet.
  - Mentored and led new engineers in development of avionics and propulsion systems.

    - Organized and analyzed cryogenic, static hot fire, and launch data leading to an increased understanding of system performance and changes in design to improve launch success.
- President/Project Manager (May 2017 - May 2018)
    - Directed the design, fabrication, and testing of a new LOX/LCH4 rocket for the FAR/Mars Launch Contest.
    - Oversaw and managed discussion of over 50 active members from multiple disciplines.
    - Built new systems and procedures that increased safety and improved documentation.
    - Participated in outreach events like the San Diego Maker Faire.
    - Managed one of the largest SDSU student organization budgets ($250,000+) and secured funding through grant applications and private donors.
- Design Lead (May 2016 - May 2017)
    - Designed and fabricated new components/systems including the Helium Pressurization Bay, Hot Gas Purge System, Igniter Base, Composite Fairings, Recovery System, and Flight Control Software.
    - Tested regulators, actuators, fittings, solenoids, software, transducers, and valves in various conditions.
    - Served on the executive board and assisted in management, outreach, and product development.

Senior Design Project - Fire Watch CubeSat, Dr. Bani Younes (Aug 2018 - May 2019)
(AE 460 - Aerospace Engineering Applications - Spacecraft Design)
- Designed and presented in a 5-person group a potential small satellite mission to monitor California wildfires.
- Created a flight model demonstrating a simple Attitude Determination and Control System (ADCS).
- Presented poster at the SDSU 2019 Student Research Symposium and SDSU Spring 2019 College of Engineering Design Day.

Senior Research Project, Dr. Joseph Katz (Aug 2018 - May 2019)
(AE 403 & AE 499 - Aerospace Engineering Senior Project & Special Study)
- Designed and built in a 5-person group a small Vertical Take-Off and Landing (VTOL) 3-rotor aircraft.
- Developed the avionics control system and tuned PID gains for vertical flight.
- Fabricated all electrical components between the control surface actuator and the flight controller.
- Collaborated with students from The Technion - Israel Institute of Technology both virtually and in person.

OTHER EXPERIENCE
College of Engineering Student Council - Vice President of Programming (Aug 2016 - May 2017)
- Planned multiple events and programs that engaged engineering students and faculty.
- Served on the executive board and focused on representing project-based engineering clubs/organizations.
- Started a new “Pumpkin Drop” event that has continued annually.

Residential Education Office - Resident Advisor (Aug 2016 - May 2017)
- Advised SDSU students through their first year at SDSU focusing on safety and security.
- Created hall activities and programs to encourage community and a positive academic environment.

Residence Hall Association - President (Sept 2015 - May 2016)
- Directed the executive and programming boards that represented 4,500 on-campus students.
- Attended regional and national conferences representing SDSU Residential Education.

SKILLS
Computer Programming: Proficient with MATLAB, Python, C/C++, Typescript/Javascript, Kotlin/Java, and LabView.
3D Software: CAD, FEA, and mesh modeling proficiency with PTC Creo/Simulate, SolidWorks, and Blender.
Propulsion: Significant experience with LOX, LNG, N2O, HTPB, LN2, Nitrogen, Helium, and pneumatic systems.
Operating System: Proficient with development on both Linux and Windows computers.
Version Control: Proficient with Git/GitHub, SVN, GrabCAD, and Windchill.
Electronics: Hands-on electrical experience with PCBs, soldering, multimeters, oscilloscopes, and microohm meters.