Joaquin Ramirez (US Citizen)

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Education

- BS, Aerospace Engineering -2022
  University of Colorado at Boulder
- Pursuing MS, Autonomous Systems
  University of Colorado at Boulder

Expected Graduation: May 2024

Skills

Python • Systems Tool Kit (STK) • SOLIS • MATLAB • Assembly • C++ • Embedded Systems C • Simulink • Xcel • SOLIDWORKS • Fusion 360 • Free Flyer ANSYS • LabVIEW • Interactive Data Language (IDL) • 3D Printing • Soldering • LaTeX

Experience

Software Engineering Intern — Jet Propulsion Laboratory — 2023-05 - 2023-09

- Developed a comprehensive Python-based solution to demonstrate Planetary Data System (PDS) API capabilties.
- Leveraged diverse software interfaces to creatively visualize data, enhancing accessibility to PDS data products.
- Seamlessly connected various project components, facilitating the demonstration of PDS search API feature.
- Quickly acquired proficiency in SPICE kernels, cartography, basemap creation, and PDS4 API, streamlining their integration within a user-friendly Jupyter notebook environment.

Guidance & Control Engineering Aide — Sierra Space — 2022-05 - 2023-05

- Developed analysis tools to assess GN&C instrument suite capabilities to inform mission requirements.
- Successfully designed thruster optimization tool via simplex for a single-fault tolerant 6 DOF spacecraft.
- Led initial avionics supplier trade initiative and helped facilitate and organize discussions.
- Completed mission overview and flight simulation for Orbital Reef mission in STK and Free Flyer software.
- Asissted in Positioning Navigation and Timing system design for an autonomus lunar rover.

Attitude Determination & Control System Engineering Intern — Space Grant — 2020-10 - 2021-08

- Designed smallsat ADCS for Denver-based Atomos Space, including selection of sensors and effectors.
- Utilized Python for first principal simulations of spacecraft flight variables and control performance.
- Developed initial CONOPS for the spacecraft's first demo mission including RPO, deorbit, LV separation, etc.

Undergraduate Research Assistant — CU Boulder (Torin Clark) — 2021-06 - 2022-05

- Effectively developed procedures to test efficacy of galvanic vestibular stimulation (GVS) as a display modality.
- Consolidated pilot test data in poster format to be presented at research conferences throughout the semester.
- Analyzed test data to iterate on procedures which will later be used to amend documentation for subject trials.

Command Controller IT — Laboratory for Atmospheric and Space Physics — 2019-05 - 2019-08

- Maintained and studied flight and ground operations for three on-orbit spacecraft
- Responsible for analyzing flight telemetry for various instruments and reporting anamolous behavior.
- Acquired invaluable experience with ground systems, flight software, and spacecraft design.

Project Experience

Attitude Determination & Control System Lead — CANVAS, MAXWELL Cubesats — 2023-01 - Present

- Responsible for momentum controller design, tuning, implementation, and test within cubsat flight software.
- Effectively lead ADCS assembly integration & test efforts including harness procurement and acceptance testing.
- Worked directly with XACT-15 unit and conducted operational tests using HYDRA ground software.

Kalman Filter Design for Statistical Orbit Determination — ASEN 5044 — 2022-05 - 2022-12

- Conducted deterministic system analysis in Matlab of a low-earth orbit satellite mission.
- Designed and compared results from a linear and extended kalman filter for stochastic nonlinear filtering.
- Utilized Monte Carlo truth model tests to tune and validate kalman filter performance.

Activities

President of Colorado University Breaking Club — University of Colorado Boulder — 2019-08 - 2023-05

- Successfully organized and managed "Rockers Rumble" breakdancing event, including budget presentations, networking with community members, event graphic design and advertisement, and overseeing event logistics.
- Coordinated event registration, timeline, facilitated battle rules and maintained composure under pressure, contributing to a seamless and memorable event for attendees.

Affiliations

McNair Scholar Alumn, Society for Hispanic Professional Engineers (SHPE)(2018-2022), American Society for Engineering Management (ASEM)(2020-2022), American Institude of Aeronautics and Astronautics (AIAA)(2019-Present), Sounding Rocket Lab (SRL)(2018- 2021), Design Build Fly (DBF)(2019-2020)