Joseph Hatch

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Objective

I'm looking for a highly technical position to capitalize on my specialization in aerospace design, but I also have an interest in propulsion, trajectory design, EDL, payload development, systems engineering, and pursuing a management position.

Education

Rensselaer Polytechnic Institute, Troy, NY — May '17
B.S. Aerospace Engineering — 3.43/4.00 GPA

Relevant Courses: Space Vehicle Design, Propulsion Systems, Boundary Layers and Heat Transfer, Fluid Dynamics Lab, Aerospace Struct and Materials, Modeling and Control of Dynamic Systems, Numerical Computing, Strength of Materials, Geometric Dimensioning and Tolerancing (JPL), Intro to Cognizant Eng. (JPL), Eng. Graphics and CAD.

Engineering Experience

NASA – Jet Propulsion Laboratory, Mechanical Engineering Co-op — Jan – Aug '16

Mars 2020 - Entry, Descent, and Landing & Rover Chassis

- Pyro and Separations – Developed prototype design (CAD/GD&T) of solution to single point of failure. Design and Analysis of Data for Bridle Cut Characterization testing with cutters and high-speed video.
- BUD (lowers Rover from Sky Crane) – Organized heritage hardware and documentation from Mars Science Lab to streamline build-to-print capabilities of project.
- Detachable Belly Panel – Organized and conducted drop testing to simulate separation event. Designed proof-of-concept prototype for low outgassing gasket. Developed test procedure to verify validity of new design.
- Descent Stage Prop Lines – Acted as point of contact for hardware. Oversaw fabrication, manufacturing, and (Instron - strain, bending, torsion) testing.

NASA Student Launch, Payload Lead — Aug '16 - Present

- Leading design, development, and integration of payload system for annual nation-wide NASA competition.
- Payload is designed to induce precision roll/de-roll maneuvers as well as act as active drag control

NEO-Scout CubeSat – Senior Capstone Design Project, Telecomm Lead — Aug '16 - Present

- Developing proposal for 3U CubeSat that will make an encounter with a near-Earth object.

Center for Flow Physics and Control, Undergraduate Research Assistant — Summer '15 - Present

- Projects assisted:
  Characterization of Transitional Boundary Layer on a Flat Plate (Northrop-Grumman) – Dr. Burak Tuna
  Interactions of a Dynamic Vortex Generator with a Cross-flow (Boeing) – Erica Cruz, Ph.D. student
  Manufacturing of Synthetic Jet Actuators (Boeing) – Kevin Housley, Ph.D. student
- Developed and manufactured active flow control actuators

Skills

Engineering/Computer: Siemens NX CAD, MatLab, Geometric Dimensioning and Tolerancing (GD&T), Wolfram Mathematica, Minitab Statistical Software, NI LabView, Microsoft Office
Laboratory: Constant Temperature Anemometry with a Hot Wire, Particle Image Velocimetry (PIV), general machine shop skills
Certification: Tripoli Rocket Association – Level 1 Certification

Leadership Experience

Treasurer, Rensselaer Rocket Society (RRS) — Spring '14 – Fall '15

- In charge of budgeting, corporate sponsorships, and allocation of funds for the club
- Raised and managed an average of $3,500 each year
- Individually built, launched, and successfully recovered 5-foot-tall rocket after reaching ~2000 feet

Production Manager, Collegiate Entrepreneurs — Summer '14

- Acted as liaison between branch manager and clients, diffusing tensions and improving relations
- Produced $60,000 in work over the summer