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Joe Shields

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Joedang.github.io

EDUCATION

- Portland State University, 3.65 GPA **Sep. 2013 – Jun. 2016**
B.S. Mechanical Engineering, Maseeh College of Engineering and Computer Science
Focus: heat and mass transfer
B.S. Physics, College of Liberal Arts and Sciences
Focus: mechanics and electromagnetism
- Portland Community College, 3.0 GPA **Sep. 2008 – Jun. 2010, Sep. 2011 – Sep. 2013**

EXPERIENCE

- Mechanical Lead, LV3 **Dec. 2015 – present**
[Created an open-hardware carbon fiber rocket airframe](#) for the [Portland State Aerospace Society](#)
Managed interdisciplinary projects among students and professionals
Published and presented [a conference paper on the project for AIAA SPACE 2016](#)
Documented design and manufacturing processes to foster institutional knowledge
Mentored student projects and assembled project teams
Maintained equipment and lab space
Designed parts using hand calculations, prototypes, computer models, CFD, and CAD
Performed FMEA and root-cause analysis
- Mechanical Lead, OreSat **Jan. 2017 – present**
Coordinated the design of all mechanical subsystems in [Oregon's first satellite](#)
Maintained the [top-level SolidWorks assembly](#) of the satellite
Incorporated constraints from NASA, NanoRacks, and OreSat electrical subsystems
Worked across engineering disciplines to resolve highly coupled designs
Led analysis and design reviews
- Lab Manager, PSU Electronics Prototyping Lab **Jan. 2018 – present**
Maintained equipment and lab space
Trained students on prototyping equipment
Ran the lab's parts store

TOOLS

- Composites manufacturing (wet, dry, high/low-temperature), metal working
- 3D printers (FDM, SLA, SLS), laser cutters, mills, lathes, hand tools
- PCB routers, soldering (hand, re-flow), Arduino

SOFTWARE

- R, MATLAB, C++, Python, Bash, Vim, Git, SolidWorks, Abaqus, AutoCAD, GIMP, Inkscape
- \LaTeX , Microsoft Office, Libre Office, Google Docs, etc.
- Ubuntu, Windows

SMALL PROJECTS

In addition to the projects below, you can check out the rest of my portfolio at github.com/Joedang/Portfolio.

- OpenFOAM analysis
A simulation of supersonic flow around the nosecone of PSAS' new rocket, used to inform its design and estimate aerodynamic heating.
- PSAS Asset Tracking System Created a specification and front-end for a website to track part maintenance and ownership.
- Restricted 3-body simulation github.com/Joedang/restricted_three_body_problem
An R script for investigating the motion of satellites within planet-moon systems.
- Ballistic trajectory simulation github.com/Joedang/Portfolio/tree/master/projectile
Realistic scenarios of short-range ballistic motion of various projectiles on different planets, accounting for buoyancy, drag, centrifugal, and Coriolis effects.
- N-body simulation github.com/Joedang/Portfolio/tree/master/MATLAB_orbits
Various scenarios involving an arbitrary number of charged massive particles.

REFERENCES

- Supervisors
Andrew Greenberg adg4@pdx.edu
Erik Sánchez, PhD esanchez@pdx.edu
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