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[Joedang.github.io](https://Joedang.github.io)

## EDUCATION

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- 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: classical mechanics and electromagnetism
- Portland Community College, 3.0 GPA **Sep. 2008 – Jun. 2010, Sep. 2011 – Sep. 2013**

## EMPLOYMENT

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- Design Engineer, Earth and Space Institute and AirPhoton **Oct. 2021 – Present**  
Designing orbital, airborne, and ground-based instruments  
Managing system requirements and interfaces  
Working with contractors, customers, scientists, and engineers to create system specifications  
Performing space-claim, keep-out-zone, and tolerance analyses  
Solving multi-disciplinary design constraints (mechanical, optical, pneumatic, thermal, etc.)
- Engineer, SpaceX **Mar. 2019 – Sep. 2019**  
Supported a wide variety of mechanisms on the [human-rated Dragon 2 docking systems](#)  
Wrote detailed and intuitive assembly instructions to meet strict quality standards  
Owned aggressive build schedules and held others accountable to them  
Solved issues including design errors, part damage, missing parts, and documentation errors
- R&D Engineer, [Pacific Diabetes Technologies](#) **Sep. 2018 – Feb. 2019**  
Prototyped wearable micro-fluidic devices and electronic enclosures  
Created designs, models, and drawings for patent applications  
Designed miniaturized assemblies for 3D printing and injection molding

## VOLUNTEERING

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- Mechanical Lead, PSAS **Dec. 2015 – Mar. 2019, Sep. 2019 – Oct. 2021**  
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
- Design Engineer, OreSat **Jan. 2017 – Mar. 2019**  
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, [Electronics Prototyping Lab](#) **Jan. 2018 – Mar. 2019, Sep. 2019 – Oct. 2021**  
Maintained equipment and lab space  
Trained students on prototyping equipment  
Ran the lab's parts store

## TOOLS

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

## SOFTWARE

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- R, MATLAB, C++, Python, Bash, Vim, Git, Jekyll, HTML
- Inventor, SolidWorks, NX, Teamcenter, Onshape, Abaqus, AutoCAD, GIMP, Inkscape
- $\text{\LaTeX}$ , Microsoft Office, Libre Office, Google Docs, et cetera
- Linux, Windows

## SMALL PROJECTS

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In addition to the projects below, you can check out the rest of my portfolio at [github.com/Joedang](https://github.com/Joedang).

- iTopie printer  
Modified and built a RepRap 3D printer from parts including a custom laser-cut frame
- [Restricted 3-body simulation](#)  
An R script for investigating the motion of satellites within planet-moon systems
- [N-body simulation](#)  
Various scenarios involving an arbitrary number of charged massive particles written in MATLAB
- OpenFOAM analysis  
A model of supersonic flow around a rocket nosecone, used to inform the part's design

## REFERENCES

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- Supervisors

Andrew Greenberg – PSAS director

[adg4@pdx.edu](mailto:adg4@pdx.edu)

J. Vanderlei Martins – principal investigator

301-828-7471, [martins@umbc.edu](mailto:martins@umbc.edu)

Eric Russo – senior engineer

714-395-8453, [eric.russo@spacex.com](mailto:eric.russo@spacex.com)

Chris Clark – EPL director

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Erik Sánchez, PhD – professor

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Erin Schmidt – former PSAS mechanical lead

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- Peers

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