FRANCESCA FRATTAROLI

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EDUCATION

Portland State University, Urban Honors College *Graduated June 2017*
B.S. in Mechanical Engineering & Master's Pathway Student
(Graduate Coursework: Advanced Fluid Mechanics, Finite Element Analysis, Robotics, & Artificial Life)

University of Glasgow *September 2012 - June 2013*
College of Film & Television, College of History & Political Science

TECHNICAL SKILLS

Hardware	Soldering, Wiring, CNC Routing, Lasercutting, 3D printing, Common Shop Tools
Design	SolidWorks (Associate Cert.), Autodesk Fusion 360, Vcarve Pro, Adobe Illustrator
Analysis	Abaqus (FEA), Magics, Microsoft Excel, RStudio
Programming	Arduino & RaspberryPi Microcontrollers, Basic C++ & Python, Visual Studio IDE
Documentation	Git, LaTeX, Microsoft Office Suite, Google Suite, Wordpress

EXPERIENCE

pdxOpen.Tech April 2020 - Current
Program Coordinator & Web Master *Portland Community College Grant Initiative*

- Designed & currently administer the pdxopen.tech website, a free remote STEAM learning space - partnering with local educators and non-profits to bring creative tech education to low income & POC students.
- Coordinate 10+ educational content contributors & manage weekly, live, remote-workshop series.

Community Art & Technology Studio February 2019 - Current
STEM & Design Center Coordinator *Portland Community College*

- Designed, built, & coordinated a new maker-space with focus on community engagement and technology exposure for under-resourced youth. Managed 6-figure budget for build-out & staffing.
- Coordinated and led hands-on Soldering, 3D Printing, Lasercutting, & CNC Routing workshops for formerly incarcerated youth (through PCC's Opening Doors Grant).
- Provided dedicated workspace, equipment, and mentorship for local alternative highschool Robotics Team.
- Co-managed over 20 Arts & Profession employees in rapid digital content creation to support college's transition to remote learning in Spring of 2020.

Cascade Fabrication Lab April 2018 - February 2019
Lab Manager *Portland Community College*

- Responsible for maintaining and repairing equipment, supervising lab use, and providing equipment and software training to faculty and students (including designing technology tutorials, guides, and projects).
- Led a 3-week, intensive invention camp for highschool students teaching human-centered design, programming, and fabrication skills– resulting in working prototypes that addressed real-world problems.

Sculpting Studio and 3D Workshop November 2017 - March 2018
Process and Program Management Assistant *Form 3D Foundry*

- Responsible for assisting VP Process Engineer and Program Manager in R&D and quoting programs.
- Performed material testing and research relating to Powderjet and SLA 3D printing, adhesives, epoxies, urethanes, wax infusion, and quality control (GD&T) with focus on improving and expanding services.
- Built large-scale vacuum bagging lamination system; prepared digital models; sourced materials/services.
- Implemented standardized quoting and process guides and labor tracking; assisted in general production.

Materials Characterization Lab June 2017 - September 2017
Mechanical Engineering Intern *3D Systems*

- Responsible for designing and constructing portable creep and stress-relaxation test-frames and measurement tools for the characterization of novel materials (utilzing SolidWorks and traditional analysis tools).
- Performed static and dynamic load testing and analysis on thermoset plastics and photoset resins.
- Exposure to SLA and CJP printing methods and model preparation techniques.

Senior Design Capstone November 2016 - June 2017
Experimental Design Lead *Portland State Aerospace Society*

- Designed, prototyped, and tested a proof-of-concept composite liquid-oxygen fuel tank for Portland State Aerospace Society's 4th generation 100-km altitude rocket (utilizing Abaqus, SolidWorks, and Python).
- Responsible for designing and supervising experiments and performance testing.
- Additional contributions included conceptual design, research, and development of analysis tools.
- Co-authored grant proposal that resulted in $8,600 in NASA funding.
- Authored AIAA conference paper.

Undergraduate Honors Thesis November 2015 - June 2017
Independent Research & Design Project *Portland State University Honors College*

- Designed, built, and tested an autonomous, Methane-Ebullition Measurement Apparatus (MEMA) to allow for low-cost ($800), in-situ measurement of methane ebullition fluxes in water reservoirs.
- Independently designed housing, power-supply, electronic control system, and code (Arduino/RaspberryPi).
- Developed proposal writing skills (received grants from NSF and PSU Honors department).

Global Change and Watershed Biogeochemistry Lab July 2014 - September 2016
Laboratory and Field Technician *Washington State University Vancouver*

- Collected and processed chemical samples which provided familiarity with field and laboratory practices.
- Operated and modified technical equipment (Mass Spectrometer, Gas Chromatograph, etc.).
- Readied data for analysis and applied theory to practical problems.

COMMISSION WORK

Mechanical Design and Prototyping of Kinetic Sculpture October 2019
Aaron Flint Jamison: Opportunity Zones, Title Piece *Kunst Halle Sankt Gallen, St. Gallen, CH*

Mechanical-Electrical Design and Fabrication of Kinetic Sculpture November 2019
Alicia Eggert: NOW, Scale replica for reproduction *Texas, USA*

VOLUNTEER WORK

Trash Hackers Collective 2018 - 2020
Founding Member *Yale Union/trashhackers.org*

The Electronic Prototyping Lab 2017
Assistant Lab Manager *Portland State University*

Documentary Film Project: Arresting Power 2014
Archival Researcher *Portland Institute of Contemporary Art*

Oregon Film Preservation Project 2013
Archival Intern *Northwest Film Center & Oregon Historical Society*

Portland Experimental Film Festival May 2012
Assistant & Projectionist

Portland Art Museum / Project Grow / Oregon Museum of Science & Industry 2010 - 2012

CERTIFICATIONS

Amateur Radio Service Technician License 2019
N7OFN *Federal Communications Commission*

SolidWorks Associate Certification 2017
Francesca Frattaroli *Dassault Systemes*

ACHIEVEMENTS & AWARDS

American Institute of Aeronautics and Astronautics Forum Paper (AIAA 2017-5134) 2017
American Society of Mechanical Engineers Capstone Winner, Oregon Section 2017
National Science Foundation Research Experience for Undergraduates Award Recipient 2016
National Merit Scholar 2012