

Katherine Denner

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EDUCATION

PRINCETON UNIVERSITY

BSE, MECHANICAL & AEROSPACE
ENGINEERING

Expected June 2018

Minor in Robotics and Intelligent Systems

COURSEWORK

Energy Storage Systems

Automatic Control Systems

Engineering Design

Mechanical Design

Design for Developing World I, II (EPICS)

Integrated Engineering Science Lab

SKILLS

CAD & SIMULATION

Experienced:

Autodesk Inventor (7 years)

PTC Creo/Pro-E (2 years)

Siemens NX (1 year) • ANSYS (1 year)

Familiar:

Solidworks • GD&T • Satellite Toolkit

LANGUAGES

Experienced:

Java (5 years) • Python (2 years)

MATLAB (2 years) • \LaTeX (2 years)

Familiar:

C++ • Simulink

FABRICATION

Experienced:

Machining (manual & CNC) (6 years)

3D-Printing (5 years) • Injection Molding

Familiar:

Plastic Welding • Laser-Cutting

ACTIVITIES

DI Rugby • Club Powerlifting

Robotics Club (President)

3D-Printing Club (Vice President)

AWARDS

NASA Aerospace Scholar

1st Place, NASA RWIW Engineering

Design Challenge

Finalist, NASA Space Habitat Innovation

Challenge

EXPERIENCE

PRINCETON ELECTRIC PROPULSION & PLASMA DYNAMICS LAB

Fall 2016 | Princeton, NJ

- Designing satellite to deorbit large space junk in LEO via electrodynamic tether
- Simulating satellite in ANSYS (structural FEA) and STK (orbital mechanics)

SPACEX | AVIONICS INTERN

Summer 2016 | Hawthorne, CA

- Designed tooling to prototype satellite battery assembly
- Created flight qual fixtures for thermal and vibration testing using Siemens NX, ANSYS Workbench, and ROI analysis with the Space Simulation Test Lab
- Cut >1000 manhours per year by designing new tooling and processes for F9 rocket and Dragon capsule avionics in cleanroom environment

CITYTAPS | ENGINEERING INTERN

Summer 2015 | Paris, France

- Designed an injection-molded combination flowmeter and solenoid valve that cost 1/6 of the off-the-shelf flowmeter-only design while also easing assembly
- Tested prior prototype and wrote an algorithm to clean sensor data, which decreased flowmeter error by an order of magnitude, from 10% to 0.72%

THE MARS SOCIETY | VOLUNTEER RESEARCHER

Spring 2013 | Mars Desert Research Station (remote)

- Designed experiment investigating effectiveness of rover wheel tread designs to prevent strandings, using MDRS's Mars-like conditions to compare designs

PROJECTS

NASA MARS ICE CHALLENGE | TEAM LEAD | AY 2016-17

- Prototyping robotic drill to harvest and filter "Mars" subsurface water
- Responsible for mechanical design of coring end-effector and air-blast cuttings removal system

POSITIVE DISPLACEMENT PUMP | 2016 - PRESENT

- Building water pump for rural developing markets with focus on DFM

GREAT SPACE BALLOON CHALLENGE | 2016 - PRESENT

- Designing payload bay (structural/thermal), flight termination unit

SOLAR TRACKER | 2016

- Modeled and 3D-printed photoresistor array to track sun's position
- Wrote integral controller to guess sun position and periodically recenter

SMALL-SCALE POWER-GENERATING WIND TURBINE | 2016

- Simulated rotor designs and modeled rotor for 3D-printing
- Automated wind tunnel tests with Python scripts

NASA RWIW ENGINEERING DESIGN CHALLENGE | 2012-13

- Designed sunshield to warm James Webb Space Telescope's electronics while cooling mirrors to take quality readings, requiring 300K difference
- Won national competition