

# James Yoder

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## Education

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### The University of Texas at Austin

2015 – Present

Pursuing BS in Electrical Engineering. GPA: 3.52/4.00. Expected graduation: May 2019.

## Work Experience

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### Avionics Intern, SpaceX

Summer 2018, Summer 2017

- Designed multiple breakout and interface PCBAs for testing of Dragon 2 control panel components
- Performed initial bringup and verification of upgraded Dragon 2 flight computer communication card
- Root-caused issues with several flight computer and control panel PCBAs leading to design revisions
- Developed test rack hardware and software for engineering testing of FC and control panel assembly
- Performed error and requirements analysis for a safety critical 3-axis MEMS accelerometer device

### Robotics Academy Intern, NASA-JSC

Summer 2015

- Wrote C# software to drive Resource Prospector lunar rover prototype with an Xbox controller
- Developed C# program to log data from RP rover Battery Management System during validation testing

## Extracurricular Activities

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### Undergraduate Research Assistant, UT Radionavigation Lab

Jan. 2018 – Present

- Adding support for SBAS data bit prediction and wipeoff to in-house software-defined RTK-GNSS receiver
- Developed a VR-based demo program to show off centimeter-accurate RTK receiver capabilities
- Created a tool to analyze log files, detecting and generating statistics for positioning data outages

### Electrical Systems Lead – Longhorn Racing Formula SAE Electric

2015 – Present

- Designed all electrical hardware for custom 300V, 80kW peak, 6.2 kWh lithium-ion battery pack
- Developed 3 evolutions of a LTC6804-based BMS to monitor cell voltages, temperatures, currents, and SOC
- Led design of a fully custom distributed CAN-based vehicle control, data acquisition, and telemetry system
- Managed a team of 10+ EE students, defining requirements, planning schedules, and leading design reviews

### Special Problems in ECE (EE X60 summer course)

Summer 2016

- Independent summer research course for class credit at UT with professor John Valvano
- Built a platform for hearing aid research based on the MSP432 microcontroller and audio ADCs/DACs

### Engine Development Team - Longhorn Rocketry Association

2015 – 2016

- Built custom failsafe Cortex-M4 microcontroller-based control and DAQ hardware for a rocket engine test stand
- Designed a PCB with interfaces for solenoid valves, thermocouples, pressure transducers, and load cells
- Developed software in LabVIEW & embedded C to run test sequences, monitor sensors, and log data

## Personal Projects

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### Software-defined GPS Receiver

- Wrote Python code capable of acquiring signals, tracking, decoding NAV data, and generating pseudoranges
- Designed MAX2769-based RF front end PCB to deliver raw signal samples over USB

### [www.stuffin.space](http://www.stuffin.space)

- A realtime 3d WebGL-based visualization of tracked objects in Earth orbit
- Uses JavaScript to calculate positions of over 15,000 tracked objects based on public TLE ephemeris data
- Received over 527,000 unique visitors in the first month of operation

## Skills & Certifications

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- C, C++, Python, C#, Java, JavaScript, MATLAB, LabVIEW, Verilog, ARM/x86 assembly, HTML/CSS
- Altium, KiCAD, EAGLE, LTspice, Solidworks, numpy/scipy, WebGL