

David A. Story

Education

Sonoma State University

Bachelors of Science

2016 - Present

Major: Electrical Engineering

Minor: Computer Science

Cumulative GPA: 3.84

Major GPA: 3.98

Expected Graduation:

May 2020

Research and Work Experience

Spaceflight Hardware Intern

NASA Johnson Space Center

Mentor: Hester Yim

Summer 2018

Designed high reliability, radiation hardened hardware for deep space applications under the Avionic Systems Division at Johnson Space Center

- Researched Time-Triggered Ethernet hardware, end system, and switches
- Used Altium Designer to create the schematic, schematic component symbols, component footprint, 3D models, and component supply links
- Learned to use SVN repository to share changes and make revisions
- Learned IPC footprint standards, IEEE Ethernet protocols, and board design skills for multi-layer, space-rated board to minimize outgassing, PIM, and thermal expansion

EdgeCube - 1U CubeSat Design

Sonoma State University

Mentor: Dr. Garrett Jernigan & Dr. Lynn Cominsky

December 2016 - Present

Developed and tested ADCS systems for EdgeCube, assisted in testing and documentation of multiple subsystems including radio system, power system, and scientific payload.

[*] Expected On-Orbit: December 2019

- Designed and tested ADCS system consisting of hardware and software controls for accelerometer, gyroscope, magnetometer, sun-sensor, and magnetorquers
- Aided in system testing of power system fail-safe modes, maximum power transfer circuit, and battery monitoring hardware and software
- Designed and assisted the development of multiple subsystem PCB designs using Autodesk Eagle
- Leading final system integration and testing of final spacecraft for delivery July 2019

November 2017 - May 2018

Undergraduate Research: Embedded Hardware for Engineering Education

Sonoma State University

Mentor: Dr. Farid Farahmand

Lead the development of a small, wireless sensor board with basic microcontroller and software capabilities to provide an introduction to embedded systems engineering

- Designed hardware that allows students to interact with physical peripherals as well as control sensors for onboard sensor data collection
- Crafted software interface for wireless and wired communication to the system, with interactive GUI which students can use to view device states and manipulate sensor data
- Deployed system in EE 486.2 class, assisted in instructing device usage, and received feedback on the effectiveness of the system in improving embedded learning skills

Mhomentum: IoT system for Fall Prediction

Sonoma State University

Mentor: Dr. Bulent Sokmen (Kinesiology)

February - May 2018

Created a wireless embedded system that could record and transmit accelerometer and gyroscope data as part of a star network for real-time data capture of center-of-balance experiments

- Implemented Zigbee modules for RF communication of boards to data capture point
- Tested data rate of Zigbee modules, error rates, and ranges for different antennas
- Programmed network control, data parsing, UI, and database for ease of use for Kinesiology students using the device
- Assisted Kinesiology students with implementing the systems in the field and tested and improved system for real-world application

Undergraduate Research: Multi-Modular Smartwatch

Design

Sonoma State University

Mentor: Dr. Farid Farahmand

November 2017 - May 2018

Implemented modular embedded boards to created proof of concept for an environmentally friendly, user-friendly smartwatch where boards can be replaced without having to replace the whole watch

- Tested combinations of E-Paper and OLED screens, in order to determine different styles that achieved lower power usages
- Implemented embedded sensors on modular printed circuit boards using systems that had been developed on previous projects
- Developed and improved a one wire communication protocol for inter-board communication and sensor data transfer to main CPU board

Hardware Technician

Mission Engineering

Manager: James Lebihan

December 2016 - May 2018

Assembled and tested electronic musical equipment, specifically switching, effects systems, power supplies, and amplifiers for guitars & basses

- Troubleshooted returned or malfunctioning electronics with bench equipment and performed rework as necessary
- Designed testing hardware and software as needed to support production line
- Conducted research and development of USB-C power supplies and compatibility with music industry standards
- Assembled and modernized vacuum tube amplifiers for audio applications

Abstracts and Presentations

Story, D.A. 2018. *Space Tech: CubeSats, Space Hardware, and the Future of US Space Policy*. Department of Engineering Science Tech Talk Sonoma State University; Rohnert Park, California.

Story, D.A. 2018. *Time-Triggered Ethernet End System Development for Deep Space Applications*. Avionics System Division Intern Forum, NASA Johnson Space Center; Houston, Texas.

Story, D.A., Wright, A., 2018. *Introductory Engineering Education with Wireless Embedded Systems*. CSU Research Competition, Sacramento State University, Sacramento, California.

Farahmand, F., House, D.A., **Story, D.A.**, Wright, A., 2018. *AkSense: Educational Development Board for Undergrads*. Sonoma State Science Symposium, Rohnert Park, California

Farahmand, F., House, D.A., **Story, D.A.**, 2018. *Mhomentum: Multi-Axis Wireless Fall Prediction Hardware Development*. Sonoma State Science Symposium, Rohnert Park, California

Farahmand, F., House, D.A., **Story, D.A.** 2018. *SmartWatch: Design of Multi-Modular Personal Embedded Systems*. Sonoma State Science Symposium, Rohnert Park, California

Arcos, A., Bautista, J., House, D.A., **Story, D.A.**, 2018. *Flight Hardware for the 1U CubeSat EdgeCube*. CubeSat Developers Workshop, Cal Poly, San Luis Obispo, California.

Arcos, A., Bautista, J., House, D.A., **Story, D.A.**, 2017. *EdgeCube Mission Development*. Sonoma State Science Symposium, Rohnert Park, California

Arcos, A., Bautista, J., House, D.A., **Story, D.A.**, 2017. *EdgeCube MPPT & Power System Design*. CubeSat Developers Workshop, Cal Poly, San Luis Obispo, California.
Poster Presentations:

Publications

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- Farahmand, F., & Story, D. A., & House, D. A., & Rowlands, R. E. (2018, June), *Aksense: A General-purpose Wireless Controlling and Monitoring Device for Teaching First-year Electrical and Computer Engineering* Paper presented at 2018 ASEE Annual Conference & Exposition, Salt Lake City, Utah. <https://peer.asee.org/29765>

Awards and Scholarships

2016 - 2018 School of Science and Technology Dean's List
2018 - Present Ernest L. & Ruth W. Finley Foundation Scholarship
2018 - Present McNair Scholars Program

2017 - 2018 Koret Foundation Research Scholarship
2017 - 2018 SOURCE Research Scholarship

Commented [1]: Sonoma State Office of Undergraduate Research and Creative Experience

Professional Affiliations

2016 - Present IEEE Member
2017 - Present ASEE Member
2018 - Present AIAA Member

Community Service

Public Astronomy Docent

Robert Ferguson Observatory
April 2016 - Present

Assist running telescopes for public events, giving presentations on astronomy and related engineering topics. Troubleshooting and assembling optical systems, CCD detectors, and spectroscopy cameras.

Analytical and Technical Experience

- Program Development & Scientific Computing
 - Proficient in Python, C/C++, Julia, Logo, and MATLAB
 - Jupyter Notebooks (Data Analysis)
 - LaTeX (Paper Documentation)
 - Image Processing (OpenCV: Python & C++)
 - Scientific Computing (Anaconda, SciPy, MATLAB)
 - Machine Learning (TensorFlow)
- ECAD PCB Design
 - Proficient with Autodesk Eagle (Schematic, PCB, footprint, component design)
 - Proficient with Altium Designer (Multilayer boards, impedance calculations, hierarchical design)
- Simulation & Modeling:
 - Cadence Virtuoso
 - LTspice / SPICE
 - MATLAB
- Electronics Test Equipment
 - Oscilloscopes
 - Multimeter

- Spectrum Analyzer
 - LCR
- Machining
 - Dremel
 - Drill Press
 - Table Saw
 - Band Saw
 - Laser cutters / Stencil Cutting
- Figure, Image, and Video Creation
 - Adobe Photoshop / Illustrator
 - Adobe Premiere
 - PixInsight
- Word & Spreadsheet
 - Microsoft Suite (Excel, Word, PowerPoint)
 - Google (Docs, Sheets, Slides)

Relevant Course History

ES 112 Fundamentals of Digital Logic Design

EE 210 Digital Circuits & Logic Design

EE 220 Electric Circuits

EE 230 Electronics I

EE 330 Electronics II *

EE 345 Probability & Statistics for Engineers *

EE 400 Linear Systems Theory *

CS 115 Programming I

CS 215 Programming II

CS 242 Discrete Math for Computer Science *

MATH 161 Calculus I Differential & Integral

MATH 211 Calculus II Differential & Integral

MATH 241 Linear Algebra & Applications in Differential Equations

MATH 261 Multivariable Calculus

* In-Progress

References

List of References can be provided on request