David A. Story

Education

Sonoma State University

Bachelor of Science

2016 - Present

Major: Electrical Engineering

Minor: Computer Science

Cumulative GPA: 3.84

Major GPA: 3.86

Expected Graduation:
May 2020

Research and Work Experience

Research Assistant – Cloud Computing
Sonoma State University
Mentor: Dr. Laura Peticolas
Fall Semester 2018

Designing infrastructure to run parallelized image processing programs on cloud servers Eclipse Megamovie project

- Designing deployment system to push program to multiple servers
- Worked with team from Berkeley SSL to optimize their image processing code
- Investigated multiprocessing techniques to improve the runtime of the software in order to reduce server costs
- Providing continuing programming support to other students and researchers throughout project

Spaceflight Hardware Intern
NASA – Lyndon B. 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. Lynn Cominsky & Dr. Garrett Jernigan
December 2016 - Present
Expected On-Orbit: December 2019

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

- 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

Undergraduate Research: Embedded Hardware for Engineering Education

Sonoma State University
Mentor: Dr. Farid Farahmand
November 2017 - May 2018

Lead the development of a small, wireless sensor board with basic microcontroller and software capabilities to introduce 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 Divison 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

- 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

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 Libraries (Anaconda, SciPy, MATLAB)

- 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 310	Microprocessor System Design *
EE 330	Electronics II
EE 345	Probability & Statistics for Engineers
EE 400	Linear Systems Theory
EE 430	Electromagnetic Theory & Applications *

EE 442	Analog & Digital Communications *
EE 486	Antenna Design *
CS 115	Programming I
CS 210	Introduction to Unix *
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
PHYS 114	Intro to Physics I – Classical Mechanics
PHYS 214	Intro to Physics II – Electrostatics, Magnetostatics, Optics

** In-Progress*

References

List of References can be provided on request