SAMUEL HOLLADAY

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EXPERIENCE

Metawave Corporation   2018-present
Hardware Engineer   *Palo Alto, California*

On System Software team of self-driving car startup developing metamaterial-based radar antennas. Working on integrating hardware components of prototype radar system, as well as interfacing radar, LiDAR, and camera sensors to enable sensor fusion with a GPU-based ADAS engine, and developing analog electronic beam steering.

This beam-steering project entailed developing mathematical software and firmware, selecting parts, designing boards, interfacing with microprocessors and custom ICs, and doing lab testing and optimization-based calibration of a phased array antenna system using an anechoic chamber and VNA. Lead engineer developing and testing FPGA-based beamsteering system interfacing with SPI, I2C, UART, and GPIO peripherals as well as RFICs. Used it with custom algorithm to calibrate W-band phased array antenna radar.

UC Berkeley Laboratory for Emerging and Exploratory Devices (LEED)   2015-2018
Graduate devices researcher for Professor Sayeef Salahuddin   *Berkeley, California*

In spintronics lab, worked on acoustically driven and spin-torque ferromagnetic resonance experiments, designed RF waveguides and fabricated magnetic structures, and measured multilayer nanostructures with spin pumping. Built ferromagnetic resonance structure from the ground up, integrating hardware (including a vector network analyzer, magnetic field controller, Hall sensor, and DAQ) and software scripts in LabVIEW and Python to measure important properties such as saturation magnetization, inhomogeneous broadening, and damping with high precision.

Maxim Integrated   2017
Applications Engineering Intern   *Colorado Springs, Colorado*

Designed and characterized circuits for multimedia serializers and deserializers for Maxim Integrated's next generation GMSL line in Automotive Unit. Created Power over Coax boards, simulated components, and improved board power supply and regulation. At the end of the internship, summarized and presented data, produced analysis of PoC circuitry after creating modeling framework and analytical expressions to design power circuits, and created family of PCB circuitry to optimize desired characteristics. Increased maximum power carried by factor of six while improving data transmission.

EE130: Integrated Circuit Devices   2016
Reader   *Berkeley, California*

Student reader grading assignments for Integrated Circuit Devices class, under Professor Sayeef Salahuddin.

Lawrence Berkeley National Laboratory   2014-2015
Undergraduate researcher in Grid Integration Group   *Berkeley, California*

Created server framework and website for MyGreenCar vechicle fuel economy app at http://mygreencar-01.lbl.gov. The app encouraged users to compare electric and hybrid cars to conventional gasoline cars, with the aim of ultimately convincing them to purchase the greener option. Worked on hybrid vehicle-grid integration, using Matlab to create a simulation platform (V2G-Sim) to enable the optimal integration of plug-in electric vehicles with the electricity grid.

Undergraduate Research Apprenticeship Program   Spring 2014
Undergraduate software researcher under Professor Alice Agogino   *Berkeley, California*

Worked on creating a Web application for a ride-sharing and shuttle transportation system for a community in need of public transit. Extensive web development using Javascript, JQuery, and Ajax programming.

Naval Research Laboratory   2012-2014
SEAP and USM Intern in Ocean Sciences Branch   *Stennis Space Center, Mississippi*

Created a comprehensive, interactive ocean modeling site to dynamically create and display data from the Navy Coastal Ocean Model (NCOM) using Python scripts at http://www7330.nrlssc.navy.mil/GOMMS/. Built the websites back-end scripts, which stored and manipulated model data for use in plots and analyses. In 2014, developed an iPhone app as part of an adaptive climatology project.

EDUCATION

University of California, Berkeley *May 2018*
M.S. in Electrical Engineering & Computer Science
Thesis: Frequency-swept Ferromagnetic Resonance Characterization of Permalloy Thin Films

University of California, Berkeley *May 2017*
B.S. in Electrical Engineering & Computer Science

COURSEWORK

Electrical Engineering: RF Integrated Circuits, Quantum and Optical Electronics, Analog Integrated Circuits, Microelectronic Circuits and Devices, Microelectronic Fabrication, MEMS, Integrated Circuit Devices, Solid State Devices, Signals and Systems, Introduction to Microelectronic Circuits

Computer Science: Algorithms, Artificial Intelligence, Discrete Mathematics and Probability Theory, Machine Structures, Data Structures, Structure & Interpretation of Computer Programs

Science: Solid State Physics, Quantum Mechanics, Physics: Mechanics and wave motion, Physics: Electricity and magnetism, General Chemistry, Properties of Dielectric and Magnetic Materials, Introduction to Multiferroic Materials and Systems

Mathematics: Multivariable Calculus, Linear Algebra and Differential Equations, Calculus

TECHNICAL SKILLS

Programming	Python, C, Matlab, C++, LabVIEW, Java, Simulink, CUDA, Javascript
Software	Cadence, ADS, DipTrace, orCAD, SPICE, AutoCAD, COMSOL, CST Microwave Studio, Unix, iOS development, Git, LaTeX
Lab Experience	VNA, photolithography, E-beam evaporator, wire bonder, PCB and IC testing, anechoic chamber
Web Development	Django, Javascript, PHP, JQuery, Ajax, Google Maps API, Node.js, Yeoman
Languages	English (Native), Spanish (Proficient), Portuguese (Proficient)

ACTIVITIES

ASUC Office of the CTO 2016 - present
Chief Engineer on Project Sensus (2016)

Led project to create portable, low-cost wireless people counter to track occupancy of campus gyms and libraries, and upload data to web application for use by students. Designed and built, almost entirely from scratch, prototypes and tested them to to track the occupancy of campus centers and inform students via a university mobile application.

Calsol: UC Berkeley Solar Vehicle Team 2013 - 2016
Data Team Lead, Webmaster (2014)

In 2014 appointed team Webmaster, in charge of managing the website, accounts, and web security, and Data team lead, in charge of processing and transmitting diagnostic and sensor data from the car during the competitive race. Worked as a freshman on the Electrical Team within the Power subteam, focusing on storing and distributing power from the cars solar cells safely and efficiently. Focused on Battery Management System (BMS) development and Hall-effect current sensing.

LeaderShape Institute retreat January 2016

Week-long program with 200 other UC Berkeley engineers to learn team-building, leadership, and consideration for social and ethical issues in engineering.

SOL Study Abroad: Granada, Spain Summer 2015

Participated in six-week study abroad program with SOL Education Abroad in Granada, Spain. Took classes in Spanish and Hispanic American Culture and Civilization, as well as Spanish language, with the University of Granada.

FIRST Robotics: Team 1912 2006-2014

Member of high school FIRST robotics team, helping with robot building, community outreach, public demos, administration, and leadership. Titles include captain of Chassis team, 2-time robot driver, and Secretary.

HONORS

2013   UC Berkeley Regents and Chancellors Scholar
2013   NASA College Scholarship Fund award recipient
2013   High school valedictorian