

# DANIEL JOHNSON

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## PROFESSIONAL SUMMARY

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Electrical and computer engineer with experience designing and testing PCBs and embedded systems, building IoT applications, analyzing power delivery network performance, managing utility-scale solar facilities, writing efficient software in C/C++ and Java, and creating AI/ML applications with Python. Skilled in hardware debugging and low-power system design, with experience driving projects from conceptualization to implementation. Seeking hardware and software engineering roles starting in the summer of 2025.

## EDUCATION

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<b>University of Colorado Boulder</b> <i>B.S. Electrical and Computer Engineering</i>	<b>June 2022 - May 2025</b> GPA: 3.8
<b>University of Colorado Boulder</b> <i>B.S. Economics</i>	<b>June 2022 - May 2025</b> GPA: 3.8
<b>Stanford University</b> <i>M.A. Education</i>	<b>June 2016 - June 2017</b> GPA: 3.9
<b>Stanford University</b> <i>B.A. Comparative Literature</i>	<b>September 2012 - June 2016</b> GPA: 3.5

## PROFESSIONAL EXPERIENCE

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<b>BioSensor Solutions</b> <i>Electrical Engineer</i>	<b>Boulder, CO</b> <i>August 2024 - Present</i>
<ul style="list-style-type: none"><li>Designed IoT network of sensor nodes for a cloud-based soil-monitoring application: drew system architecture diagrams, selected COTS components, assessed risks, generated test plans, estimated costs, and established development timeline</li><li>Sourced all components and completed schematic design, layout, and routing for data hub and LTE module in EasyEDA</li><li>Currently testing LTE communications module, developing code for sequential data reporting and mesh network communications, revising initial PCB designs, and verifying AWS database and ArcGIS GUI functionality</li></ul>	
<b>Sandia National Laboratories</b> <i>Electrical Engineering Intern</i>	<b>Albuquerque, NM</b> <i>June 2024 - August 2024</i>
<ul style="list-style-type: none"><li>Programmed speed measurement module using accelerometer component of embedded system on RF device</li><li>Wrote code in C and Python; coordinated on merge requests and bug/issue tracking in GitLab; debugged with SEGGER J-Link probe; compiled and managed code with Linux (WSL/Ubuntu)</li><li>Performed hardware and software tests using a variety of algorithms to gauge the accuracy of the accelerometer module</li></ul>	
<b>University of Colorado Boulder</b> <i>Research Apprentice</i>	<b>Boulder, CO</b> <i>June 2023 - April 2024</i>
<ul style="list-style-type: none"><li>Aligned laser system and successfully troubleshoot autocorrelation device to measure the pulse width of a Titanium-Sapphire infrared laser</li><li>Conducted microspectroscopy research aimed at monitoring the presence of biological foulants on reverse osmosis (RO) water filtration membranes; presented preliminary findings to CU student researchers</li></ul>	
<b>D. E. Shaw Renewable Investments</b> <i>Analyst</i>	<b>Denver, CO</b> <i>February 2020 - April 2023</i>
<ul style="list-style-type: none"><li>Authored company policies and procedures for Federal Energy Regulatory Commission (FERC), North American Electric Reliability Corporation (NERC), and US Energy Information Administration (EIA) reporting, as well as regional compliance documentation for organizations including CAISO, WECC, and ERCOT; created clear, consistent, and easy-to-use processes; responded to requests for information and spot audits by regulatory authorities</li><li>Provided company response to investors' concerns regarding the COVID-19 health crisis in 2020</li><li>Negotiated third party contracts for regulatory compliance work, reducing costs from initial quote of \$150,000 to an actual expenditure less than \$20,000</li><li>Managed 18.5 MW<sub>AC</sub> of solar generation facilities in central California: analyzed quotes from vendors for maintenance activities like panel washing and vegetation management; modeled and calculated ROI to ensure all operational decisions were accretive; strategized with operations and maintenance provider to maintain SCADA system integrity and consistent energy production; ensured project met its debt-service coverage ratio every quarter</li></ul>	
<b>Acumen, LLC</b> <i>Technical Writer</i>	<b>Burlingame, CA</b> <i>March 2019 - January 2020</i>
<ul style="list-style-type: none"><li>Used Adobe RoboHelp to create help systems for clinicians, researchers, and California Department of Health Care Services officials using Acumen's data analysis products</li><li>Learned and enacted the Agile/Scrum workflow (sprint planning, daily scrums, continuous delivery, etc.)</li><li>Wrote content for the MedRIC public website (now the NIA Data LINKAGE Program)</li><li>Produced network architecture schematics, software task flow diagrams, user guides, internal policies and procedures, product evaluations and purchase proposals, and FAQs and answers related to Acumen's products and services</li></ul>	

## **Luis Valdez Leadership Academy**

*English Teacher*

**San Jose, CA**

*August 2017 - July 2018*

- Developed curricula for and taught all junior-year English courses (English 11, AP English Language and Composition); led freshman-year advisory group focused on college planning and preparation

## **BlueEnergy**

*Intern*

**Bluefields, RACS, Nicaragua**

*July 2015 - September 2015*

- Modeled an efficient, practical, and safe wood/coal oven made from locally sourced materials using CAD software
- Wrote and conducted market study examining client income, expenses, and home air quality to determine potential uses of oven for small businesses, setting the stage for ongoing research on product effectiveness
- Constructed several ovens in rural communities

## **Seattle BioMedical Research Institute**

*Lab Intern*

**Seattle, WA**

*June 2012 - August 2012*

- Raised mosquitoes for experimentation and dissected them for collection of Plasmodium sporozoites
- Developed proficiency in biosafety levels (worked in BSL-2), PCR, liquid handling, sterile lab technique, and widefield microscopy

## **PROJECTS**

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### **Food Classifier App**

- Developed program that classifies images as edible or inedible
- Used TensorFlow to load and manage convolutional neural networks for image processing and classification
- Parsed extant databases with pandas and used LLMs to develop a set of labels for classification
- Tested code using Jupyter Notebooks and command line prompts; currently developing application front-end

### **Custom Arduino PCB**

- Designed an Arduino-compatible PCB around the ATmega328P MCU; used CH340 chip for USB-to-UART conversion
- Included 5 V barrel jack and USB power supplies, ESD protection via TVS diode, and 12 MHz and 16 MHz oscillators to establish serial and microcontroller clocks
- Bootloaded the ATmega328P after production and assembly

### **NorCal 40A Radio**

- Built 7.0 MHz transmit filter, used oscilloscope to verify resonant frequency
- Implemented harmonic filter (low-pass, Butterworth) using LC ladder
- Constructed 4.9 MHz crystal ladder IF filter, validated operation via SPICE simulation of equivalent RLC circuit
- Tuned capacitors and wound inductors to obtain maximal signal at desired frequency
- Tested transmitter and receiver switches (transistor circuits with RC delay) to ensure proper functionality
- Sent and received Morse code between NorCal radios

### **Labyrinth Maze Game (STM32F429 Dev Board)**

- Generated a random maze consisting of walls, waypoints, and a goal on the board's LCD; used gyroscope data to enable the user to guide a ball through the maze
- Managed game events using real-time operating system (RTOS) principles and tools such as threads, semaphores, and mutexes

### **Image Processing with MATLAB**

- Processed images of cellular/biological structures using various techniques in MATLAB, including image segmentation (morphological operations, watershedding) and object tracking
- Generated image of cardiomyocytes via confocal laser scanning microscopy; used Fiji/ImageJ to process and edit

### **Robotic Car**

- Tested motor to determine parameters such as internal resistance, moment of inertia at full speed, and friction damping coefficient
- Built tachometer, motor driver, and direction control feedback circuits
- Controlled car movement and behavior of NeoPixel LED attachment with Arduino

## **SKILLS**

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**Programming Languages:** Assembly, C, C++, HTML/CSS, Java, JavaScript, MATLAB, PHP, Python, R, Stata, SystemVerilog

**Software Skills:** Altium Designer (CAD), Confluence, Excel (incl. Data Analysis Toolpak), Figma, Git and GitHub, Grafana, Jira, Linux (WSL, Ubuntu), REST APIs, Simplicity Studio, SPICE (LTspice, SIMetrix), STM32CubeIDE, TensorFlow, scikit-learn, Vivado Design Suite, Visual Studio IDE, VS Code, Webflow

**Engineering Skills:** Artificial intelligence (AI), breadboarding, circuit assembly, debugging, feedback loops and control systems, FPGA programming, image processing and segmentation, machine learning (ML), multimeter measurement, network and system diagramming, oscilloscope measurement, PCB design, power supply operation, project planning, schematic capture, soldering, technical writing, troubleshooting, waveform analysis

**Domain Knowledge:** Boolean logic, Bode plots, calculus, data structures & algorithms, differential equations (ODEs, PDEs), discrete mathematics, electromagnetism, embedded systems, filter design, first and second order circuits, gate logic, Laplace and Fourier analysis, linear algebra, mechanics, operating systems (RTOS, threading, resource management), optics (lasers, spectroscopy), probability and statistics, processor simulation, proofs, wireless communications (RF, WiFi)