ERIC BERG

Systems Engineer & Project Leader

ericinventor@gmail.com

314-660-7018

ericinventor.com

About Me

I am a multidisciplinary engineer with 4 years of skills and experience in electrical, mechanical, software, and systems fields. I've held roles in automotive, aerospace, and mobile machinery industries both domestically and abroad. I have an entrepreneurial spirit which has driven me into multiple startup environments including my own, where I've developed business acumen. I enjoy developing a strong business case and leading teams to create targeted and creative solutions, especially in the field of robotics. I excel in fast-paced, collaborative, multidisciplinary environments focused on innovation and new business.

Education

Cornell University — Master of Engineering in Systems Engineering — May 2021

Cornell University — Bachelor of Science Electrical and Computer Engineering — May 2019
Robotics Minor, Computational and Data Science Certificate

Universidad Carlos III de Madrid — Semester Abroad in College of Engineering — Spring 2018

Work Experience

Moog – Bill Moog Program: Accelerated Leadership Development Rotational Program

Systems Engineer in Moog Construction Group — 2021-Present

Headquarters Office — Buffalo, NY

- Designed, built, programmed and installed remote teleoperation retrofit kit for 8-ton excavator in 2 months
- Conceived, designed, and led electromechanical actuation technology demonstrator project for largest US construction tradeshow in US, ConExpo, completed in 8 weeks with team of 3, and showcased demo to customers at tradeshow
- Proposed product idea for excavator data connectivity kit and managed team of 3 to build prototype, demonstrated to customer
- Created excavator autonomy technology roadmap and autonomy strategy and presented to leadership
- Executed and presented formal trade study for mast lift vehicle architecture and design using systems engineering tools

International Rotation- 6 months — Amsterdam, NL

- Performed and presented systems analysis and CONOPs for mobile fast charging of an electric excavator
- Lead technical troubleshooting efforts for electric excavator project for OEM customer
- Coordinated robotic excavator demo at largest construction tradeshow globally, Bauma, with university partner, ETH Zurich

Reinforcement Learning Control on Robotic Excavator in Innovation Group — Buffalo, NY — 2021

- Worked with team of 4 engineers to convert standard mini excavator into fully robotic machine in 9 months
- Designed and developed hardware solution for actuating joysticks and foot pedals of excavator
- Developed software in Python/C++ with ROS framework on Raspberry Pi and Gaming PCs for vehicle forward/inverse kinematics, vehicle digging interface GUI, and data post processor for analyzing controller performance
- Produced a series of high quality demonstration videos to document progress and capture story of entire project

Electronics Development Engineer in Aircraft Group — Los Angeles, CA — 2019-2021

- Led Continuous Technical Improvement Initiative to identify and resolve production, assembly, and test inefficiencies that consume time or money, first 3 projects resulted in over $200,000 annual savings
- Systematically performed root cause analysis on qualification vibration test failure for aircraft control electronics box and strategically eliminated all possible causes with testing and analysis until final cause was determined
- Led failure investigation for A350 electronic box communication errors, analyzed aircraft mission computer logs, proposed corrective actions, and developed machine learning algorithm to predict failure of electronic components
- Designed, built, and wrote software for automated test stands for sensor (RVDT) accuracy, hysteresis, and rigging

SpaceX – Avionics Instrumentation Intern — Los Angeles, CA — Summer 2018

- Worked on cameras used on rockets during flight for engineering data and mission broadcasts, specifically:
  - Performed optical filter testing to improve video quality by mitigating adverse effects of infrared light and reflections
  - Created Vectorscope software tool to analyze color distribution of video stream in Python
- Developed automated email alert system to notify team when underqualified sensors are used in critical applications

Tesla – New Technology Integration Intern — Palo Alto, CA — Summer 2017

- Contributed to next generation wiring architecture for all low-voltage devices in the car, specifically:
  - Prototyped functional door subassembly using new wiring architecture
  - Created UI tool to size conductors using a thermal model, and analyze harness components using python and excel
  - Conducted system-level analysis of electrical system to optimize voltage, raw material consumption, weight, and cost

Work Experience (Continued)

Independent Engineering Consultant for mPOD — Buffalo, NY — 2021-2022

- Hired by small biotech startup to design and build of first prototypes for their first product, a rapid COVID test scanner
- Integrated Arducam Pico4ML microcontroller, SD card reader, lipo battery shield, buttons, LEDs, and other electronics into functioning COVID rapid test scanning device
- Designed device's graphical user interface (GUI) and wrote embedded C++ software to integrate all electronics
- Used CAD and 3D printing to design and prototype test unit casings over many iterations

Hoverbot – Micro Drone Startup – Business Partner and Customer Evaluation Lead — Ithaca, NY — 2018-2019

- Pitched startup at multiple startup business competitions, won $5000 Engineering Innovation Award
- Performed motor sizing optimization analysis to maximize thrust to weight ratio of <3g custom brushless outrunner drone
- Conducted user studies involving trial experiments and surveys with 13 users to understand how to improve flying experience

XBoard, Inc. Startup Company – Founder and CTO — Ithaca, NY — 2014-2018

- XBoard was building the world's first trickable electric skateboard: hub motors, Li-ion battery, glove control interface
- Raised over $65,000 in funding for company from various sources including:
  - 1st Place in Advance Technology Track of New York Business Plan Competition (8 teams)
  - 1st Place in Life Changing Labs Pitch Competition at Cornell (10 teams)
- Startup accepted into Cornell's top startup incubator, eLab Startup Accelerator, and Alpha Lab Gear Incubator
- Partnered with top semiconductor company, NXP, at Consumer Electronics Show (CES) 2017 and 2018 in Las Vegas

Pickzen – eCommerce Saas Startup – Business Operations Intern — Madrid, Spain — Spring 2018

- Worked with team of 3 to advance an ecommere store plugin that guides customers to customized product recommendations
- Designed web-app user flows and front-end dashboards, generated customer ROI reports
- Participated in sales calls directly with CEO, create Sales Playbook including sales phone call scripts and email templates for customer engagement
- Learned about lead generation, capture, filtering, relationship management, sales call strategies, ecommerce conversion, website analytics

Other Experience

NASA Micro-g NExT Design Challenge Team – Team Lead and Technical Lead — Ithaca, NY — 2015-2017

- Designed and built asteroid aggregate tool and under-ice sampling tool for astronauts in microgravity environments
- Team selected twice by NASA as finalists in 2017 and 2018 Micro-g Competitions
- Recruited 17 new members and raised over $4500 in funding for project from institutional and state organizations
- Both tools successfully tested in the Neutral Buoyancy Lab (NBL) of the Johnson Space Center in Houston, Texas

Cornell Baja SAE Project Team – Electronics Subteam — Ithaca, NY — 2015-2019

- Team builds a dune buggy from scratch (custom frame, CVT, gearbox, and brakes) for SAE competitions
- Developed a handheld display system to visualize real time vehicle data collected by the data acquisition system
- Compiled transfer functions for sensors and designed GUI for post processing data from car's data acquisition system

Cornell Undergraduate Research – Exercise in Microgravity — Ithaca, NY — 2016-2017

- Worked under Professor Ana Diaz Artiles, MAE Cornell University and MIT
- Designed and built an exercise platform to simulate exercise in microgravity for conducting experiments
- Presented research work in poster competition at NASA HRP Investigator's Workshop 2017 in Galveston, TX

Project Portfolio

www.ericinventor.com/projectportfolio

Skills and Expertise

- Bilingual – English/Spanish
- Adaptable-Lived in 7 cities in 3 countries
- Quick learner with strong initiative
- Leadership, Project Management
- Public Speaking and Presenting
- Socially Adept
- CAD/CAM and PCB Design
- 3D Printing, Rapid Prototyping
- Machining (Lathe and Mill)
- Python, C++, ROS, SQL, Linux
- Machine Learning-sklearn, pytorch
- Data Analytics
- Systems Analysis/Trade Studies
- Batteries/Power Systems
- Robotics
- BLDC motors/Electric Vehicles
- Microcontrollers UI/UX Design
- Video Editing (YouTube Channel)

Achievements and Awards

- Featured as Spotlight Employee in Moog's Career Spotlight Series 2022
- Established injection molding line for 50,000 COVID-19 face shields for #SavetheFrontline Initiative 2020
- Selected as only candidate for Moog's Accelerated Leadership Development Rotational Program 2019
- MakeMIT Hackathon Amazon Prize Winner for assistive wearable system for visually impaired 2017
- Project PALLAS paper published in American Institute of Aeronautics and Astronautics (AIAA) 2016
- College of Engineering John McMullen Dean's Scholar – top award in College of Engineering 2015
- Meinig Family Cornell National Scholar – scholarship awarded to students with extraordinary leadership potential 2015
- Featured on local TV channel and newspaper for electric skateboard creation 2015

Hobbies and Special Interests

- DIY Engineering Projects YouTube Channel (ericinventor) – 43 videos, >1 .5 million views, >7000 subscribers
- Snowboarding, Skateboarding, Dirt biking, Motorcycling, Basketball, Soccer
- Salsa Dancing
- Race Drone Flying