






ERIC BERG

Systems Engineer & Project Leader

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. My entrepreneurial spirit has led me into multiple startups including my own, where I've developed an understanding for customer-centric business strategy. 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 Robotics Minor, Computational and Data Science Certificate	May 2019
	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 a standard mini excavator into fully robotic machine in 9 months
- Designed and developed a hardware solution for actuating joysticks and foot pedals of excavator
- Developed software in Python/C++ with ROS framework on Raspberry Pi and gaming PC 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 on circuit card assembly
- 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 in Python to analyze color distribution of video stream
- 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:
 - 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

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MOOG
CONSTRUCTION

MOOG
Innovation Group

MOOG
AIRCRAFT GROUP

SPACEX

TESLA

Work Experience (Continued)

Independent Engineering Consultant for mPOD

📍 Buffalo, NY

📅 2021-2022



- Hired by small biotech startup to design and build first prototypes for their first product, a COVID rapid 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 for 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, embedded 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 ecommerce 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 with CEO, create Sales Playbook including phone call scripts and email templates for customer engagement
- Learned about lead generation, capture, filtering, relationship management, sales call strategies, ecommerce conversion, and 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 Artilles, 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/#portfolio — A collection of my robotics, mechatronics, electronics, and electric vehicle projects.

Skills and Expertise

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