Mitchell Kain

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Summary

Recent Mechanical Engineering M.S. graduate specializing in robotics, CAD, and product design, with hands-on experience in SolidWorks, MATLAB, and 3D simulation. Experience managing diverse technical teams and developing aerospace and military systems. Skilled at integrating design, simulation, and control to develop innovative automation and aerospace solutions.

I am an Engineer who can calculate, code, model, prototype, and test. I bring curiosity, grit, and results.

Skills

Coding: MATLAB, Python, SQL, Linux, C/C++, Markdown, HTML, LaTeX, G-code

Software: ROS2, Arduino, ESP32 , Universal G-code Sender

- **Computer-Aided Design:** SolidWorks, OnShape, FreeCAD, MeshMixer, Blender
- **Simulation and Analysis:** Abaqus, COMSOL, Simulink

Fabrication: 3D Printing, Rapid Prototyping, Soldering, Laser Cutting, CNC, Hand/Power Tools

Other: Leadership, Innovation, Problem Solving/Design, Research, Technical Writing, Chess

Education

Boston University, MS in Mechanical Engineering, Dynamics Systems and Controls — Jan 2025

- **Coursework:** Robot Motion Planning, Vibrations of Complex Mechanical Systems, Soft Robotics, Additive Manufacturing, Fluid Dynamics, Thermodynamics, Static Analysis, Dynamic Analysis
- **Lab work:** Developing, and rapidly prototyping soft robots in BU's Morphable Biorobotics Lab (MBL), and Robotics & Autonomous Systems Teaching and Innovation Center (RASTIC)
- **Graduate Course GPA:** 3.92 (3.84 all classes)

Galvanize Inc., Data Science Boot Camp – New York, NY — Mar 2020 – Jun 2020

USMC Primary Flight School, Second Lieutenant: Student Naval Aviator – Pensacola, FL — Oct 2015 – Jan 2017

- Intensive Military Leadership and Aviation training, including: Navigation, Radio communication, Hydraulic Systems, Engine Systems, Aerodynamics, and Military Operations
- Live flight training hours in Cesna 172 and T6-Texan acrobatic aircraft and simulators

University Of Rochester, BS in Applied Mathematics — May 2011

Experience

NASA Langley Research Center, Aerospace Academy Lead Research Associate – Hampton, VA — Jun 2024 – Aug 2024

- Led a diverse team of 12 Mechanical, Electrical, and Aerospace Engineers and Physicists to research new technologies build prototypes, enhancing the capabilities of the NASA Aerospace Research Directorate
- Designed and tested Emergency Drone Recovery and Detection Systems, improving safety measures
- Used MATLAB and video analysis to analyze descent profiles and impact data to optimize impact reduction

Galvanize Inc., Lead Data Science Resident/Curriculum developer – New York, NY — Jun 2020 – Aug 2021

- Revised curriculum, tutorials, and lectures on Python, SQL, Statistics, Probability, Machine Learning, Computer Vision, Data Engineering ensuring most up-to-date and accessible material was delivered
- Taught Data Science and Python to over 40 Ph.D., Master's, Professional, and Veteran students equipping them with essential skills for careers in data science
- Specialized in Computer Vision applications and Reinforcement Learning, contributing to innovative projects and enhancing the curriculum with cutting-edge techniques

United States Marine Corps, Captain: Supply and Logistics Officer – Camp Lejeune, NC — Jan 2017 – Jan 2020

- Supervised all ground supply operations for the 2nd Marine Aircraft Wing (2nd MAW), ensuring financial obligations were met and unit readiness remained high
- Mentored and managed 16 officers while leading inspection teams to ensure compliance with all regulations, standing orders, and federal law
- Oversaw $77 million in military equipment and a $2 million budget, maintaining mission capability and accountability across multiple commands
- Procured, implemented, and integrated new technologies as Innovation Officer, improving operational efficiency and informing future Marine Corps procedures

Projects

Plotter/Laser Engraver/Chess Robot   Sep 2025 – Current
- Iteratively designing and building my own chess robot, starting with 3 stepper motor XY Gantry system
- Powered by Arduino Uno running GRBL and a Raspberry Pi 5 running Ubuntu
- Currently designing end effectors and sensors for chess play against humans, using ROS2 integration

NASA Guided Parachute   Jun 2024 – Aug 2024
- Designed/built/tested a prototype guided gliding parachute designed to reduce the kinetic energy of a large falling drone for the NASA UAS Office
- Designed to be steerable away from populated areas and infrastructure and other hazards

Soft Robotics Competition   Mar 2024 – May 2024
- Designed/built a primarily silicone Soft robot to win first place in an Intercollegiate team competition
- Custom pneumatic actuators propelled 6-legged soft Robot though an obstacle course consisting of turns, ramps, water, sand, and drop tests

LiDAR Based Autonomous Hovercraft   Oct 2023 – Dec 2023
- This 3-fan robotic hovercraft processes LiDAR and accelerometer data with onboard Raspberry Pi microcontroller control system that accounts for drift using potential-based path planning methods
- Has future applications for uneven/amphibious environment security, mapping, or search and rescue