

Blaine Allen

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I'm determined to accelerate the manufacturing of Starships. My experiences offer exceptional qualifications in several fields critical to this effort.

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EDUCATION

- **Engineering - Master of Science**
Missouri University of Science & Technology - 2023
- **Engineering - Bachelor of Science**
Missouri University of Science & Technology - 2018
- **Aerospace Maintenance - Associates of Applied Science**
Community College of the Air Force - A&P Equivalent - 2014

EXPERIENCE

- **Engineering (10 years)** - Multidisciplinary experience in project management and logistics with electrical, mechanical, and computer engineering.

Engineered electrical brain-computer interface, fluid system modeling, titanium wire-feed welded cubesat chassis, and various personal projects.
- **Technician/Mechanic (12 years)** - Air Force Stratotanker Crew Chief Mechanic and Supervisor, pinsetter mechanic, automotive mechanic, etc.

Accustomed to taking extreme responsibility in high-stakes environments.
Proficient at high-speed maintenance & rapid turnaround of crewed missions.
- **Leadership, Project Management, & Communication** - Supervisor of homeless shelter, college technician/engineering instructor, first aid instructor, physics tutor, etc.

Led diverse teams to resolve high-stakes challenges in highly stressful careers.
Balanced simultaneous full-time academics and full-time work for over 10 years.

CURRENT

- South Texas Astronomical Society: Honing technical skills building the non-profit to help educate the community of all ages about space exploration and problem-solving.
- Reviewing fundamentals of engineering reference handbook.

ENGINEERING EXPERIENCE

Graduate Engineer

Missouri University of Science & Technology

Electrical & Computer Engineering Department - Computational Intelligence Lab

Mechanical & Aerospace Engineering Department - Mechatronics Lab

Rolla, Missouri — 8/2018 to 12/2022

In Army-funded engineering, I used a variant of the 5-step process (question, delete, optimize, accelerate, automate). Signal processing, time-series analysis, fluid system modeling with differential equations, and mechanical structures.

Projects

- Developed deposition parameters of 6-axis titanium wire-feed welding robot for cubesat chassis beam structures.
- Used differential equations to model fluid systems for applications in pharmacokinetics and brain injury prognosis.
- Designed pipeline of signal amplification, processing, machine learning, and source reconstruction of electrical activity with Python, MATLAB.
- Engineered mechatronic control systems for quadcopter/cursor control with time series analysis and electrical brain data signal processing.

Responsibilities

- Instructor for mechanical engineering senior course in systems engineering design. Focus on mechanical, electrical, and high-pressure fluid systems.
- Technical writing of research publications, documentation, and grants.
- Software: Microsoft Office, SPICE (circuits), C++, Python, MATLAB, NX, etc.

Additional Engineering

Designed and built Computational Value Theory in economics with Python. 2022

Designed and built an electroencephalograph medical device. Created amplification circuits and signal processing for cursor control brain-machine interface. 2018

Hydrogen, oxygen generator electrolysis hardware. 2019

Startup Engineer and Founder: Designed and built a bio-inspired computing system and managed a team of 12 engineers. 2016, 2017, 2018

TECHNICIAN EXPERIENCE

Crew Chief Craftsman Mechanic: KC-135 Stratotanker

U.S. Air Force: Staff Sergeant

McConnell Air Force Base, Wichita, Kansas — 8/2010 to 8/2018

Secret Security Clearance

- Supervised and performed the inspection, troubleshooting, and hands-on maintenance of all aircraft systems. Responsible for signing off on final system checkouts before crewed flights.
- Damage analysis and preventative maintenance servicing.
- Engaged in over 60 temporary duty missions CONUS and supported ~150 missions OCONUS and through Middle East combat zone deployment.
- Excelled among my peers and worked as a team to create “exceptional records of safety and aircraft maintenance efficiency” standards.
- Maintained flawless quality assurance record through 8 years.

Troubleshoot, inspect, install, replace, or adjust:

Mechanical: Panels, sheet metal failure/cracks, corrosion identification, windows, flight control surfaces (ailerons, flaps, speed brakes), horizontal and vertical stabilizer, landing gear assembly, brake assembly, cables/wire rope accessories, rivets, fasteners, bolts, clamps, grommets, screws, gaskets, safety wire, etc.

High-pressure Hydraulic/Pneumatic: cylinders, motors, pumps, snubbers, valves, adapters, fittings, couplers, gauges, hoses, o-rings, etc.

Electrical: 3-phase motors, AC motors, DC motors, linear actuators, engine ignitors, radome, centrifugal blowers/fans, switches, relays, solenoids, indicator lights, all aircraft lighting systems, circuit breakers/fuses, breaker/fuse panels, wiring, and wire harness maintenance, etc.

Service: ~5000 psi pneumatic nitrogen and hydraulic fluid servicing, gaseous aviators breathing oxygen (GOX), F-108 jet engine hydraulic fluid, and engine oil.

Inspection: Inspected aircraft with extreme attention to detail for serviceability, part dimension compliance, corrosion identification, installation errors, flight/mission damage, and manufacturing defects. Aircraft inspection details vary from 30 minutes to 4+ hours (preflight, post-flight, etc) and certified final checkout before crewed flights.

EDUCATION SUMMARY

Computer Engineering - Master of Science

Missouri University of Science & Technology

Rolla, Missouri — GPA: 3.5 — 8/2018 to 5/2023

Engineered funded projects by the Department of Defense (Army) using mechanical, electrical, and computer engineering with diverse teams.

Coursework: Mechanical Vibrations, Statistical Data Analysis, Data Mining, Nonlinear Optimization Mathematics, Advanced Computational Intelligence, Clustering, Neural Networks, Artificial Intelligence, Control Systems, Additive Metal Manufacturing Design & Optimization.

Computer Engineering - Bachelor of Science

Missouri University of Science & Technology

Rolla, Missouri — GPA: 3.2 — 8/2014 to 6/2018

Engineering disciplines ranged from aerospace, mechanical, and electrical, to final graduation in computer architecture and algorithm optimization.

Coursework: Modern Physics, Electronic Devices, C++, Assembly Code, Discrete Math, Data Structures, Digital Engineering, Computer Architecture, Nanotechnology, Communication Networks, Digital Signal Processing, CAD, FPGAs, Engineering Innovation, Differential Equations, Financial Mathematics.

Aerospace Maintenance - Associates of Applied Science

Community College of the Air Force

Wichita, Kansas — GPA: 4.0 — 8/2011 to 6/2014

Trained in precision inspection, maintenance, and system checkout of all aircraft airframe and powerplant subsystems.

Practiced resolving issues in manufactured parts - including installation of mechanical parts, executing aviation system diagnostics, root cause analysis, and implementing standard practices for repair procedures.

CURRENT PROJECTS & ACCOMPLISHMENTS

CURRENT PROJECTS

- Guiding engineering of hybrid rocket (NO₂ + HTPB) for Brownsville high school team for 10,000 ft altitude attempt. - 2022 to present
- Actively studying available technician and engineering information of the Starship program. Collab with Everyday Astronaut to document Starship OFT.
- Reviewing fundamentals of mechanical design, Fundamentals of Engineering reference handbook, and Space Mission Engineering The New SMAD.

LEADERSHIP & COMMUNICATION EXPERIENCE

Worked my way through over 10 years of school working full-time and part-time jobs.

College Teaching Assistant in Systems Technician/Engineering: 2020 -2022
Instructed course in the practical uses and troubleshooting of high-pressure fluid and electrical systems. Awarded the highest possible instructor rating.

Homeless Shelter Shift Supervisor (Night Job): 2020 -2022
Poised to resolve high-stakes crisis situations when solo-operating in a homeless shelter. Leveraged teamwork with algorithmic and engineering thinking to optimize and balance resource supply and demand.

First Aid Battlefield Medicine & CPR Instructor: 2014 - 2016

College Physics Tutor: 2014 - 2018

ACCOMPLISHMENTS

1st Place: Missouri University Engineering Design and Build Competition -
Developed electrical electroencephalograph for brain-computer interface. 2018

Published 4 papers in engineering applications in neural science - signal processing for brain-computer interface, electrical time series, fluid systems modeling with differential equations - see Google Scholar - 2020, 2021

President of Rotary International Club - Organized community projects: clothes drive, food drive, 5k for Wounded Warrior Project - 2014, 2015

Created community clean-up projects - 2015, 2016, 2020, 2021, 2022, 2023

Ironman Triathlete - (140.6 Boulder, CO & 70.3 Coeur d'Alene, ID) - 2016, 2018

Air Force Achievement Medal - U.S. Air Force - For actions taken “averting \$633.6 million in catastrophic damages” - 2012