Blaine Allen

Non-traditional engineer determined to build systems to accelerate the manufacturing of Starship factories

ACCOMPLISHMENTS

Published 4 papers in engineering neuroscience prognosis: brain-computer interface, electrical time series, fluid systems - see Google Scholar - *2020, 2021*

Co-author of DoD and NSF Research Grants in physics and modeling of brain science - *2020, 2021*

President of Rotary International community service team - *2014, 2015*

Created Community Volunteer Street and Park Cleanup Organizations - *2014, 2015, 2020, 2021, 2022*

Ironman Triathlete (140.6, 70.3) - *2016, 2018, training*

Awarded Air Force Achievement Medal for actions taken "averting $633.6 million in catastrophic damages" - 2012

PART-TIME ROLES

Campus IT research support: supercomputer hardware, website build *2016 to 2018*

Research team founder, engineer: Designed and built bio-inspired computing system and managed team *2016 to 2018*

First Aid, CPR Instructor *2014, 2015, 2016*

College Physics tutor *2014, 2015, 2016, 2017*

EXPERIENCE

Graduate Research Engineer

Missouri University of Science & Technology (doctoral research)
Rolla, MO — 8/2018 to 5/2022

Researched and designed physics solutions from first principles in electrical signal processing, modeling fluids with differential equations, and mechanical structures

- Created unique methods of brain injury prognosis with body fluid physics-based modeling with mechanical systems and partial differential equations

- Designed methods of electrical signal processing, machine learning, and electrical source reconstruction for brain injury prognosis with Python, MATLAB

- Designed brain-machine interface mechatronic control systems with time series analysis and signal processing of electrical data with MATLAB

- Instructed mechanical engineering senior course in systems engineering design and experimentation. Excelled at technical communication and mentorship across a breadth of systems: mechanical, electrical, and high-pressure fluids

Homeless Shelter Shift Supervisor

The Rolla Mission: *Full-Time Night Job through Grad School Engineering*
Rolla, MO — 11/2020 to 5/2022

Responsible for optimization and redesign of robust processes & shelter safety

- Leveraged algorithmic and engineering thinking to optimize efficient resource use, create standardized protocols, and design the shelter from first principles

- Poised to resolve high-stakes crisis situations when solo-operating homeless shelter with up to 60 patrons, honing skills of collaboration and teamwork

Aerospace Mechanic: KC-135 Stratotanker Crew Chief

U.S. Air Force (~4-year full activation): Staff Sergeant
McConnell Air Force Base, Wichita, KS — 8/2010 to 8/2018

Supervised and performed the inspection, production, and hands-on maintenance of all aircraft systems. Responsible to sign off on final system checkouts for crewed flight

- Led the troubleshooting and repair of aircraft subsystems: mechanical, electrical, avionics, pneumatics, high-pressure hydraulics, sheet metal, and jet engines

- Inspected aircraft with extreme attention to detail for part compliance, installation errors, flight/mission damage, and manufacturing defects

- Led the hands-on repair of all aviation systems as well as oversaw work orders by specialist personnel. Certified U.S. Air Force Level 7 (Craftsman) Crew Chief

- Operated aircraft tow vehicle and JLG lift with fall protection equipment at heights

- Designed curriculum to instruct and train apprentices

- Former Secret Security Clearance

Designed and built Computational Philosophy of value theory with Python - 2022

Hydrogen, oxygen generator electrolysis hardware -2019

Designed and built electroencephalograph medical device from scratch for cursor control brain-machine interface - 2018

Rebuilt 2003 Subaru Impreza boxer engine - 2014

Amature model rocket building - 2012, 2013

CURRENT RESOURCES

The New SMAD: Space Mission Engineering, Modern Compressible Flow (Anderson), Modern Engineering for Design of Liquid Propellant Rocket Engines (Huzel)

Starbase Sim, Everyday Astronaut, CSI Starbase, NASA Spaceflight daily Starbase updates, Scott Manley, The Efficient Engineer

EDUCATION

Computer Engineering M.S.
Missouri University of Science & Technology
Rolla, MO — GPA: 3.5 — 8/2018 to 12/2022

Though my degree is in computers, I prefer engineering solutions from a systems perspective. Broad and deep experience in mechanical and electrical engineering, with research using first principles physics problem-solving

- Research topics: Electrical signal processing for brain-machine interface control with an electroencephalograph, brain injury prognosis with electrical time-series analysis and machine learning, biomarker mathematical modeling, and dyson swarm satellite survey

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

Computer Engineering B.S.
Missouri University of Science & Technology
Rolla, MO — GPA: 3.2 — 8/2013 to 6/2018

Engineering disciplines ranged from aerospace, mechanical, electrical, computational architecture and algorithm optimization

- Designed and built electroencephalograph for brain-machine interface

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

Aerospace Maintenance Technology & Leadership A.A.S.
Community College of the Air Force
Wichita, KS — GPA: 4.0 — 8/2011 to 6/2014

Trained in precision inspection, maintenance, and checkout of all aircraft airframe and powerplant subsystems. Aviation science was applied in high-responsibility situations on international missions and deployment

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

- Formal training in collaborative teamwork and leadership

- Skilled in fundamentals of aviation diagnostics of mechanical stress/strain, electrical system faults, avionics, pneumatics, high-pressure hydraulics, sheet metal failure, and operational checkouts of the F-108 high-bypass turbofan jet engines