Kyle Stanevich

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SUMMARY

Aerospace Engineer with research background. Looking for a dynamic role with a math and physics focus. I'm a generalist that can learn quickly and dig into problems. I have experience with GNC, stereo vision, simulation, missile design, data analysis, airfoil analysis, spacecraft electric propulsion, testing, harnessing, and systems engineering. Willing to travel and relocate.

EXPERIENCE

Amazon (Project Kuiper) – Redmond, WA **2021-present**

Systems Engineer – Satellite Avionics Testing

- Defined requirements for unit acceptance testing. These requirements flow down from the design requirements and feed into the test automation software. If the design requirements are changed, then the software on the test systems are automatically updated to match.
- Ran cost reduction exercises to prepare for production. As the design matured, the test system scope could focus. This led to the ability to consolidate and reduce equipment. Factors considered included price, commonality, design complexity, labor, and lead times.
- Maintained a schedule to track test system bring-up and early production testing. Parts of the test systems needed to come together simultaneously to ensure functionality. Gating dates were created to inform due dates and show dependencies on other teams. Ready dates were created to show the production team what test capabilities would be available when.

Hardware Automation Engineer – Propulsion Unit Testing

- Wrote Python automation software for the testing framework and equipment drivers. The testing framework handled system configuration, data recording, pass/fail analysis, and report generation. The drivers controlled power supplies, electronic loads, relays, thermal chambers, DMMs, and SMUs. Overall, the final test script was able to run for multiple days without manual intervention.
- Owned environmental testing of the electric thruster power and control board. This involved designing, building, and running test racks that would validate flight hardware functionality. The test racks included off-the-shelf electronics testing equipment, a custom interface PCBA, and custom harnessing.
- Created hardware-in-the-loop emulators to aid with rapid development of the propulsion system. The emulated devices included torque rods, valves, heaters, and various sensors.

Sandia National Laboratories – Albuquerque, NM **2020-2021**

Guidance, Navigation, and Control Engineer – Hypersonic Missile

- Added novel guidance laws to the CUDA C++ hypersonic missile simulator. The guidance law algorithms were taken from research papers. The simulator evaluated performance of different GNC configuration using Monte Carlo analysis.
- Developed a digital twin for the hypersonic missile avionics. Components and sensors were modeled using Simulink and run on Speedgoat real-time machines. Every component was modularized so real hardware could be swapped in. This enabling rapid hardware-in-the-loop testing as well as a debugging platform for the avionics software.
- Tested fin and actuator sub-assemblies. Testing involved writing a test plan, running the equipment, and analyzing the results. The test rig contained large stores of mechanical and electrical energy therefore I developed safety procedures for the equipment.

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General Atomics **2018-2020**

Aerospace Engineer – Proposal Development

- Formulated PID, PTOC, and SMC roll control methods for the Next Generation Interceptor. The methods were compared using a Matlab-based simulator. Gain mapping was done to allow choosing transient response specifications for the PID controller. PTOC and SMC tunable parameters were analyzed to show their effect on the response.
- Developed a thermal fluid simulator of a liquid-cooled thermal management system for a high-powered laser system. The simulator could analyze different pipe layouts, working fluids, and heat exchangers to determine max running time and margin. It could also determine pipe layout susceptibility to flow disturbances.
- Evaluated multiple hydrofoil designs for a submarine concept. Multiple designs were analyzed using CFD. The results were validated against scale model testing. The results were also used to determine possible mission profiles. Scaling methods were used to show the effect of vehicle size to performance.

Computer Vision Engineer – Railgun

- Designed a 3D tracking system based on stereo vision. High speed IR cameras were used to track the railgun projectile during launch events, with tracking results similar to those from radar. High speed visible light cameras were used to track shrapnel during quarry dispense testing, eliminating the need for manual witness card analysis.
- Created a railgun bore wear and deposition scanner. The system used a laser sheet and camera to capture cross section pictures inside the bore. A python script turned these pictures into a 3D representation. Different scans could be compared to see how the bore shape changed over time.
- Automated imperfection identification for composite manufacturing. Photos were taken of the railgun barrel after each composite layer. These photos were stitched together to create a surface map. Image processing techniques were used to classify any imperfections. These imperfections were tracked across layers to ensure they did not grow above a critical size. This same technique was re-applied to electric motor manufacturing.

Data Scientist – Railgun

- Analyzed radar performance against GPS data from UAVs. Flight paths were created to simulate the worst-case scenario for radar. The UAVs were equipped with RTK GPS to enable 1cm position accuracy. The results were used to compare various radar systems.
- Ran auto and cross correlation analysis on telemetry readings from inside the railgun. The correlation results were used to improve the design of the telemetry electronics. The telemetry results were used to improve the physics model of the railgun.

University of Illinois **2015-2018**

Research and Teaching Assistant

- Teaching assistant for the spacecraft electric propulsion class. This class covered plasma physics, Hall, gridded ion, pulsed plasma, MPD, arcjet, and resistojet thrusters.
- Research assistant in the Helicon Injected Inertial Plasma Electrostatic Rocket (HIIPER) electric propulsion lab. This thruster was a fusor with an asymmetrical grid fed with plasma from a helicon. I built a new helicon, designed thrust measurement equipment, and operated the thruster. Along the way, I learned about plasma modeling, laser interferometry, RF

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power, and vacuum equipment.
  - arc.aiaa.org/doi/abs/10.2514/6.2017-4629
- Research assistant in the Center for Plasma-Material Interactions Fusion lab. I worked on the Divertor Edge and Vapor shielding eXperiment (DEVeX), tokamak, and supported other projects around the lab. I learned about plasma deposition, high voltage electronics, and schlieren imaging.
  - nucleus.iaea.org/sites/fusionportal/Shared%20Documents/FEC%202016/fec2016-preprints/preprint0582.pdf

EDUCATION

University of Illinois at Urbana-Champaign **GPA: 4.00** **2018**
Master of Science, Aerospace Engineering
Focused on: electric propulsion, combustion, distributed and satellite control systems

University of Illinois at Urbana-Champaign **GPA: 3.97** **2017**
Bachelor of Science, Aerospace Engineering
Focused on: control systems, CFD, systems engineering, UAVs, thermodynamics

SKILLS & LANGUAGES

- **Software:** Matlab, Simulink, SolidWorks, Fluent, NX, Mathematica, Comsol, Abaqus
- **Programming:** Python, C++, JavaScript, OpenCV, SQL
- **Other:** Linux, Windows, Git, SVN, Jira, Confluence