SETH ZELMAN

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SUMMARY

Self-motivated engineer with experience in model-based software development and systems engineering, autonomous flight management and battery management systems, vehicle dynamics modeling and simulation, battery electrochemical and thermal modeling and simulation, theory and implementation of control and estimation algorithms, and real-time rendering and animation. Skilled in clearly communicating complex concepts and collaborating in a team environment to solve challenging problems and complete projects within budget and schedule.

Core Competencies

Effective Communication | Team Collaboration | Critical Problem Solving | Technical Computing | Software Design

Technical Skills

MATLAB/Simulink | C/C++ | Python | VSCode | Git/GitLab | ROS | Unity/ C# | Unreal | JS/HTML/CSS

PROFESSIONAL EXPERIENCE

Peak Energy Technologies   Burlingame, CA
Senior Systems Modeling Engineer   March 2025 – Present
- Establish scalable battery systems modeling and simulation infrastructure to accelerate decision-making and early validation of energy storage system architectures
- Define system-level functional and performance requirements using model-based analysis and data insights
- Develop and test battery management algorithms including state estimation, cell balancing, and safety monitoring
- Define cell test experiments, process data to identify cell parameters, and fit nonlinear data to analytical functions

Aurora Flight Sciences   Manassas, VA/Virtual
Guidance, Navigation, and Controls Engineer   June 2021 – February 2025
- Led preliminary design of flight control system for experimental active flow control technology demonstrator
- Mapped demonstrator mission objectives to flight control system requirements and architecture
- Developed generic, unit-tested flight control algorithms, flight test support functions, and utility libraries
- Developed framework for closed-loop nonlinear simulation and statistical performance analysis
- Built custom software applications for video animation of vehicle simulation trajectory data
- Authored one conference paper and one patent application

The Boeing Company, Boeing Commercial Airplanes   Everett, WA/Virtual
Guidance, Navigation, and Controls Engineer   July 2019 – June 2021
- Led small team investigation into automated contingency management for improved approach and landing safety
- Analyzed stability robustness and performance characteristics for 777X program to ensure compliance with regulatory requirements and design objectives
- Developed dynamic flight display and remote operator application to demonstrate new pilot alerting concepts
- Installed out-the-window visualization system with flight control hardware and high-fidelity simulation to accelerate and optimize qualitative feedback from test pilots
- Designed and tested robust autopilot controller algorithms for fixed-wing freighter concept

The Boeing Company, Boeing Defense, Space & Security   St. Louis, MO
Guidance, Navigation, and Controls Engineer   November 2017 – June 2019
- Analyzed flying qualities, stability robustness, and performance characteristics for variety of fighter aircraft to ensure compliance with all applicable requirements, specifications, and design objectives
- Designed and integrated simulation and modeling software for aircraft 6-DOF simulation
- Interfaced with test pilots to develop and execute test plans to evaluate flying qualities and performance
- Developed software tools to improve stability analysis, simulation, and data visualization processes

The Boeing Company, Boeing Defense, Space & Security   St. Louis, MO
Electrical Design and Analysis Engineer   July 2016 – November 2017
- Designed electrical hardware integration and test stations to support F/A-18 and EA-18G programs
- Supported F/A-18 Systems Integration Lab with hardware diagnostics, integration, and testing

EDUCATION

University of Illinois at Urbana-Champaign   Virtual
Master of Science in Aerospace Engineering, May 2018   GPA: 3.54/4.00

University of Illinois at Urbana-Champaign   Champaign, IL
Bachelor of Science in Aerospace Engineering, May 2016   GPA: 3.54/4.00