Andrew Olson

San Jose, CA

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Summary

Multidisciplinary engineer with 13 years of experience in electromechanical design and modeling, design and implementation of control systems, system architecture, R&D, Free Space Optical Communication, and embedded systems.

Work Experience

CACI, Inc. - Optics and Photonics Systems West — Los Gatos, CA

Sr. Electro-Opto-Mechanical Engineer — Dec. 2021 - Present

- Individual contributor and team lead in electro-mechanical and control system design
- Supported internal R&D projects and the development of next generation laser communication systems
- Electro-mechanical design and test of both piezo and voice coil actuated micron level fiber positioners
- Control system development, hardware in the loop testing, model validation for subsystems and complete laser communication terminals using MATLAB/Simulink with Speedgoat Real-Time Target machines
- Led the development and execution of multiple pointing, acquisition, and tracking demos for customers.
- Developed and tested Field Oriented Control (FOC) of BLDC motors for inertially stabilized gimbal systems.
- Researched and introduced an integrated modeling approach for control system development that links the mechanical finite element model and control system model
- Mentored and trained mid-level and junior engineers in system modeling, control theory, and hardware testing.
- Provided technical input and cost estimation for multi-million dollar proposal efforts.

SA Photonics (acquired by CACI in December 2021) — Los Gatos, CA

Mechatronics Engineer, Sr. Electro-Opto-Mechanical Engineer — Jun. 2012 - Dec. 2021

- Provided architectural design and trade study support to the CTO, Mechanical Engineering, and System Engineering groups
- Worked on multiple-disciplinary teams to design successful systems for government and commercial customers
- Assisted with concept generation and writing of Small Business Innovative Research (SBIR) proposals
- Managed prototype design from inception to completion, including concept development, design and analysis, prototyping, testing, troubleshooting, and manufacturing.
- Electro-mechanical design, control system design, and testing of voice coil actuated mechanisms.
- BLDC motor selection, sensor selection, control system design, and prototyping for gimbal pointing mechanisms.
- Designed and developed opto-mechanical systems for high-precision optical applications ensuring alignment, stability, and thermal performance
- Developed pointing and control algorithms for novel coarse pointing assemblies
- Wrote firmware in C for ARM Cortex, Delfino, and C6000 processors for prototype bring-up and test
- Created GUIs in Python for automated calibration and testing to save the production and test team hours of manual test time
- Supported integration, test, and debug tasks internally, in the field, and at customer facilities

Cal Poly State University — San Luis Obispo, CA

Research Assistant — Jan. 2011 - Sep. 2011

- Assisted with projects related to hybrid rocket motors and boundary layer flow measurements.

Patents

US11730356B2, "Mobile ophthalmic device", Granted 2023-08-22

US9973274B1, "Fast tracking free space optical module", Granted 2018-05-15

Education

California Polytechnic State University, San Luis Obispo — Graduated June 2012

M.Sc.,B.Sc., Mechanical Engineering, Mechatronics Concentration

Skills

Computer: Python, MATLAB/Simulink, Solidworks, Solidworks Simulation, Thermal Desktop, FEMM, git, C, MS Office and Excel

Lab/Prototyping Skills: Speedgoat Real-Time Target Machines, Digital/Analog Scopes, Spectrum Analyzers, Function Generators, AWGs, Debugging, Vibration Tables, Data Acquisition, Thermal Vacuum Chambers, Fiber optics, Lasers, 3D Printing, Soldering, Shop Tools

Interests

Sewing, California native plants, baking, running, hiking, biking