RÉSUMÉ OF

MAURICE IRVING WOODS

CONTACT

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Multidisciplinary scientist-made-engineer eager to apply my acquired knowledge and skills in a collaborative engineering environment to further mankind's spacefaring capabilities through the application of embedded systems and spacecraft control systems technologies, spurring the curiosity of next-generation scientists to explore the frontiers of science.

SUMMARY

◦ Aerospace engineer raised on physics and astronomy focusing on electro-mechanical and embedded systems
◦ Creative "maker" whose home-grown craftsmanship is complemented by technical and scholastic training
◦ Experience with team leadership on multiple robotics, satellite, and rocket payload design projects
◦ Passionate about learning all I can from others and contributing all I have to low-level aspects of projects

SKILLS

◦ Mechanical Design (Autodesk, Solidworks)
◦ Embedded Systems Design (AVR, PIC, ARM)
◦ Software Development (C, MATLAB, Python)
◦ CNC Manufacturing (Mill, 3D Printing)
◦ Circuit Board Design and Assembly (EAGLE, Altium)
◦ Mission and Subsystems Management

EDUCATION

Masters of Engineering in AeroSpace
University of Colorado at Boulder **August 2015 to Present**

◦ Emphasis in Control Systems in the Aerospace Systems Focus Area
◦ Exploring topics in embedded systems and communications systems with respect to control systems
◦ Honing skills in computer programming and software integration to electromechanical systems, including MATLAB, Python and Assembly languages, focussing on embedded C.
◦ Extending experience in manufacturing and systems design with workshops and classes that focus on CNC manufacturing and microcontroller-based system design
◦ Pertinent completed and enrolled courses and projects:

◦ Classical Control Systems
◦ Attitude Dynamics & Control
◦ QB50 Challenger US01 Smallsat Mission
◦ Mechatronics & Robotics
◦ Embedded Systems Design
◦ UNP NS-9 MAXWELL SmallSat Mission

Bachelors of Science in Physics *Summa Cum Laude*
University of Northern Colorado **Graduated May 2012**

◦ Emphasis in Astronomy and a Minor in Mathematics
◦ Led several undergraduate research projects and presented at various conferences
◦ Pertinent completed courses and projects:

◦ Analytical Mechanics
◦ Electricity & Magnetism
◦ 41.088 Koehler Rocket SAT-C
◦ Modern Observational Astronomy
◦ Modern & Electro Optics
◦ 2012 COSGC Robotics Challenge
◦ Quantum Mechanics
◦ Robotics Engineering
◦ Rosanova 41.092 Rocket SAT-X

WORK, INDUSTRY, AND VOLUNTEER EXPERIENCE

Embedded Systems, Testing, and Ground Support Equipment Engineer

Colorado Center for Atmospheric Research CU, Boulder, CO **May 2016 to Present**

- Develop flight software and Command & Data Handling subsystems, particularly with respect to ground support equipment/software, sensor integration, and the Attitude Dynamics and Control System
- Conduct extensive Day-In-The-Life testing on flight hardware using thermal-vacuum equipment at LASP
- Support system development and testing using HYDRA Instrument and Spacecraft Interface Software
- Exploring new roles to support the development of electro-mechanical spacecraft mechanisms

Laboratory Equipment Engineer

MPI Probe Labs, Longmont, CO **October 2014 to Present**

- Collaborate with laboratory technicians to discuss potential developments to be pursued for improving transducer repair quality and punctuality, including parts acquisition and equipment maintenance
- Personally design and develop electro-mechanical systems for testing and repair purposes that are used in on-site repairs or developed as customized products

Robotics Engineer

RoadNarrows Robotics, Loveland, CO **June 2012 to October 2014**

- Designed mechanical and electrical systems for intelligent industrial, research, and educational robotics systems for RoadNarrows platforms and client/contracted projects
- Contributed software to robot control systems by developing core software and embedded components
- Leveraged expertise in physics by providing consultation with respect to applied physics and optical equipment implementation
- Spearheaded and designed new public-facing website, created public relations content, and collaboratively developed new-product introduction designs, documents, and marketing materials

Board/Sub-Committee Chair, Founder, and Member (Volunteer)

Loveland CreatorSpace, Loveland, CO **June 2013 to October 2014**

- Board Secretary chair and member of Education and Public Relations sub-committees for development of a Loveland-based community "Makerspace"
- Focused on exposing community to observational astronomy and the construction of telescopes

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ABBREVIATED PORTFOLIO

University of Colorado Boulder - Graduate Projects

Multiple Cubesat Projects, namely,

- *"MAXWELL (*UNP NS-9*)"* 6U cubesat, mechanical and electrical hardware for the Attitude Dynamics and Control system. Developed reaction wheel assembly including motor control and dynamics
- *"QB50 Challenger (US01)"* 2.5U cubesat, flight software for the Command and Data Handling system. Focused on task scheduling, science instrument interfacing, message handling, and debugging.

University of Northern Colorado - Undergraduate Research Projects

Multiple Colorado Space Grant Balloon and Sounding Rocket Projects, namely,

- *"ReEntry Experiment SAT-X (Rosanova 41.092 Rocket SAT-X)"* rocket experiment (capsule deployer which collected atmospheric reentry dynamics) - Managed design team, payload structural design, testing lead

"Color Schlieren Imaging With A Two-Path, Double Knife Edge System" - Project Lead

- Published in "Optics Express" journal of optics, Vol. 22, Iss. 7, pp. 8041–8046

"A Novel Way to Measure the Distance to an Asteroid" (Measure the distance to a near-Earth asteroid) - Used web-based telescopes to image an asteroid and used photometric tools to measure the asteroid's orbital radius to aid in curriculum activity planning for the university astronomy program

RoadNarrows Robotics - Notable Projects

"Hekateros" (Educational intelligent robotic manipulator) - Designed electrical control systems

"Kuon" (Educational intelligent mobile payload platform) - Designed structural and electrical systems