RÉSUMÉ OF

MAURICE IRVING WOODS

CONTACT

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SUMMARY

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.

- 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 experience
- Experience with team leadership on multiple robotics, satellite, and rocket payload design projects
- Brings intentional, compassionate, and actionable contributions to projects through critical thinking

SKILLS

Mechanical Design (Solidworks, Onshape)	CNC Manufacturing (Milling, Rapid Prototyping)
Embedded Systems Design (PIC, AVR)	Circuit Design & Assembly (Spice, EAGLE, Soldering)
Scripting & Firmware (C, MATLAB, Python)	Simulation & Testing (LabView, Instron)
Instrumentation & Sensor Integration	Traditional Optics & Laser Optics

EDUCATION

Masters of Engineering in AeroSpace

University of Colorado at Boulder **Graduated December 2017**

- Emphasis in Control Systems in the Aerospace Systems Focus Area
- Explored topics in embedded systems and radio communications systems with respect to control systems
- Honed skills in computer programming and software integration to electromechanical systems, including MATLAB, Python and Assembly languages, focussing on embedded C.
- Extended 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	Mechatronics & Robotics (+TA)
Attitude Dynamics & Control	Embedded Systems Design
QB50 Challenger US01 Smallsat Mission	UNP NS-9 MAXWELL SmallSat Mission

Bachelors of Science in Physics *(SCL)*

University of Northern Colorado **Graduated May 2012**

- Emphasis in Astronomy and a Minor in Mathematics
- Led several undergraduate research projects, many focused on optics (see portfolio on next page)
- Pertinent completed courses and extra-curricular projects:

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

WORK AND INDUSTRY EXPERIENCE

Product Design and Instrumentation Engineer

Integrated Teaching & Learning Program, CU, Boulder, CO **October 2017 to Present**

At CU's ITLP, I've cultivated the success of students and faculty alike through hands-on learning

- Provided design engineering support to engineers from all disciplines (mechanical, electrical, civil, applied mathematics, etc.) and levels (undergraduates, graduates, researchers, and faculty)
- Renowned as the go-to engineer for critical design feedback and innovative solutions to project challenges, especially with respect to instrumentation, electro-mechanical prototyping, and integration
- Acted as a reliable resource for nearly every software tool made available to CU engineering students, such as Solidworks, LabView, ANSYS, EAGLE CAD, and more
- Developed and taught engaging, hands-on skill-building workshops across technical and critical-design-thinking topics (Arduino, Electronics, CAD, Spatial Visualization, and Prototyping)
- Played a critical role in procuring, maintaining, and training staff and users on laboratory equipment, such as 3D printers, laser cutters, hand-tools, and educational modular experiments
- Curated and maintained an extensive knowledge-base (used internally and publicly) for the equipment and educational methods used by the ITLProgram to encourage proliferation and consistency of service
- Designed and built laboratory equipment (specifically labspace furniture and experimentation fixtures) for accessibility, usability, and durability, including the use of structural analysis tools to ensure integrity

Embedded Systems, Testing, and Ground Support Equipment Engineer

Colorado Center for Atmospheric Research, CU, Boulder, CO **May 2016 to October 2017**

As a graduate research student at CU Boulder, I kickstarted a new leg of my career by learning embedded software development and instrumentation integration for 2 small-satellite projects (see portfolio below)

- Developed flight software and Command & Data Handling subsystems, particularly for ground-support equipment/software, sensor integration, and the Attitude Dynamics and Control System
- Conducted extensive Day-In-The-Life testing on flight hardware using thermal-vacuum equipment
- Supported system development and testing using "HYDRA Instrument & Spacecraft Interface Software"
- Explored new roles to support the development of electro-mechanical spacecraft mechanisms

Laboratory Equipment Engineer

MPI Probe Labs, Longmont, CO **October 2014 to October 2017**

Designed and built electro-mechanical fixtures and equipment used by ultrasonic probe repair technicians

Junior Robotics Engineer

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

Designed mechanical and electrical systems for intelligent research and educational robotics systems

ABBREVIATED PORTFOLIO

For more, please visit mowoodsiii.com

University of Colorado Boulder - Graduate Research 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 control, including motor and attitude dynamics
- *"QB50 Challenger (US01)"* 2.5U cubesat, flight software for the Command and Data Handling system. Focused on task scheduling software, 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

RoadNarrows Robotics - Robotics Engineer Projects

*"***Hekateros***"* (Educational intelligent robotic manipulator) - Designed and assembled PCB systems

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