Jerin Roberts

Curriculum Vitae

Vancouver, BC, Canada
(250) 682 6536
avrocf105@live.com

Education

2016-Current **Master of Applied Science**, *University of British Columbia*, *Mechanical Engineering.*

April, 2015 **Bachelor of Science**, *Thompson Rivers University*, *Physics.*

Experience

2014-2015 **Research Assistant**, TRIUMF, Vancouver, BC.
M9 Prototype Muon Spectrometer Project
Detailed Achievements:
- Designed and constructed Experimental Spectrometer for Silicon Photomultiplier (SiPM) and DAQ testing on beam-line.
- Designed Linux based Simulation (C/C++) to determine theoretical spectrometer resolution using imported .stl meshes with openGL visualization, and ROOT analysis.
- Setup and Conducted experimental tests of spectrometer DAQ using VME hardware and Midas software.

Summer 2014 **Undergraduate Research Assistant**, SNOLAB, Sudbury, Ontario.
SNO+ Experiment: Umbilical Retrieval Mechanism (URM) Project
Detailed Achievements:
- Designed and implemented chain drive system on URM vastly improving performance
- Re-Designed/fabricated Pulley Wheels using AutoCAD/3D printer
- FEM analysis to verify pulley integrity
- Assisted PMT assembly on SNO+ in class 2000 and 5000 underground clean labs

Summer 2013 **Undergraduate Research Assistant**, Thompson Rivers University, Kamloops, BC.
Bluebird tracking using RFID technology.
Detailed Achievements:
- Designed housings for electronics/feeders optimized for 3D-printing
- Designed/Fabricated RFID circuit boards using EagleCAD software
- Wrote software for Interfacing sensors with Raspberry Pi and Arduino platforms.
- RFID Antenna tuning and construction.

2012-2014 **Physics TA**, Thompson Rivers University, Kamloops, BC.
Undergraduate Physics 1100 and 1200 Laboratories Courses
Detailed Achievements:
- Composing and Presenting 1hr lecture on required material (2x per week)
- Leading and Guiding 30+ students through physics experiments
- Answering questions and providing one on one support for students
- Marking Exams and Assignments
- Lab Equipment Set-up and Maintenance

Awards

2013 Undergraduate Research Experience Award Program (UREAP)

Computer skills

Languages/ Libraries	C/C++, Java, Visual Basic, LaTeX, Assembly, OpenGL, cURL, OpenCV, ROOT, CUDA, Midas
OS/Programs	Ubuntu 14/16, Windows 7/8/10, Solidworks, ANSYS, AutoCAD, Eagle CAD, Aspen, ROOT, R, MIDAS, Labview, Z88Aurora, Git
Devices	VME QDC/ADC/TDC, Arduino, Altera FPGA, Raspberry pi, Newport Stepper Motors/Drivers, Tektronix Scopes

Leadership and Volunteer Work

Current	UBCRocket Engineering Design Team (Aerostructures Team Lead)
2010-2015	Physics Help Center hosted by Phi-6 Club
2012-2014	Physics Magic Show Presentation
2012-2013	Open House Science Night Presenter

Research Interests

- Sounding Rocket Design
- Aerodynamic Modeling
- Aerospace Applications
- Hydrogen Refueling Systems
- CFD Design
- High Altitude Ballooning

References

Dr. Omar Herrera, University of British Columbia,
Program Manager CERC.
omar.herrera@ubc.ca
604 822-5634

Dr. Syd Kreitzman, TRIUMF,
Research Scientist MuSR.
syd@triumf.ca
604-222-7303

Dr. Christine Kraus, SNOLAB,
Canadian Research Chair in Particle Astrophysics.
tine@snolab.ca
705-561-8413

Dr. Mark Paetkau, Thompson Rivers University,
Professor Physical Sciences.
mpaetkau@tru.ca
250-828-5453

George Weremczuk, Thompson Rivers University,
Lecturer, TA Supervisor.
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University of British Columbia
Vancouver, BC

October 18, 2016

Dear Department of Mechanical Engineering,

I am writing to apply for scholarship and award opportunities offered through University of British Columbia. I welcome the opportunity to discuss my mechanical and engineering skills as well as the opportunities I have had to develop them. As you can see from my attached resume, I developed my engineering and design skills through several research and co-op related positions.

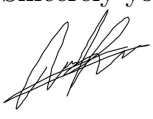
During summer and fall 2015, I worked on the development of the M9 prototype muon spectrometer currently being designed and built at TRIUMF. Under the supervision of Dr. Syd Kreitzman, I designed and constructed a beamline muon spectrometer used for testing prototype sensors and DAQ electronics. In addition to producing professional 3D models and drawings in Solidworks I also designed a photon propagation simulation and visualizer to determine the resolution of the new spectrometer for different geometrical configurations of scintillation pieces. My work at TRIUMF has enabled me to refine my engineering and programming abilities which will be an asset for my future career goals.

In the Summer of 2014 I worked at SNOLAB under the supervision of Dr. Christine Kraus on the SNO+ experiment. During my term I spent a great deal of time engineering solutions to correct the slippage issues plaguing the umbilical retrieval mechanisms, a device responsible for lowering radioactive sources into the multi-million dollar detector. In addition to designing high-traction pulleys, I also designed and fabricated a chain-drive system which successfully met budget, space and radioactivity requirements. My time with SNOLAB has given me great technical experience that I believe combined with my mechanical intuitiveness and knowledge of physics will aid me during my professional career.

For a research position during the summer of 2013, I was involved in the design and production of RFID bird tracking equipment for the Thompson Rivers University Biology Department. The project required the fabrication and delicate assembly of over 20 SMT circuit boards and dispensing platforms. In addition I also designed software in C/C++ using cURL libraries to couple all electrical components to a Raspberry Pi device for wireless data communication to a local server. My time at Thompson Rivers University has given me hands-on experience which coupled with my problem solving capabilities will be invaluable towards my professional career.

I look forward to starting my career, as well as pursuing opportunities for professional development and advancement within University of British Columbia. Thank you for your kind consideration of my qualifications.

Sincerely yours,



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