Akshiv Bansal

Mechanical Engineer - Research and Development

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education

2013-2018 **Bachelor** of Applied Science, in Engineering Physics with Distinction
Minor in Honors Mathematics — The University of British Columbia
GPA: 86% – Dean's Honor List

experience

Engineering Experience

AURIS HEALTH — Redwood City, CA || Sept 2018 - Current
Mechanical Engineer, Instruments - Advanced Development

- Characterize performance for a suite of surgical instruments for use in robot assisted laparoscopic surgery.
- Define, test, and refine instrument life models using a variety of statistical and empirical methods.
- Design bench-top experiments, including fixtures and sensor selection for design validation.

GENERAL FUSION — Burnaby, BC || May 2017 - Aug 2017
Plasma Engineering Co-op

- Designed an ultrafast (<2ms) protective shutter to shield optical sensors from corrosive liquid metal splash.
- Explored and characterized high voltage symmetry measurement for rapid discharge coils.
- Built mechanical and electrical isolation of diagnostic equipment, in a volatile and high noise environment.
- Assisted in the assembly, commissioning, and maintenance of ultra high vacuum vessels.

AVIGILON — Vancouver, BC || May 2016 - Dec 2016
Systems Engineering Co-op

- Designed solution for mass detached area storage (petabyte scale), from design to manufacturing delivery.
- Field sized and qualification tested workstations, servers, and displays.
- Translated qualitative criteria to object performance metrics with automated and reproducible tests.
- Rewrote windows installers for all major Avigilon software packages using Python, WiX, and C#.

GRIN TECHNOLOGIES — Vancouver, BC || Feb 2015 - May 2015
Mechanical Engineering Co-op

- Designed and carried out experiments to determine the thermal properties (heat capacity, radiation coefficients, etc.) of different motors and helped to build a robust thermal model under various loading conditions.
- Designed in SolidWorks and fabricated using the in house machine shop a wind tunnel for in-flow testing of thermal conductivity.

Experience

Engineering Physics Student Association and Engineering Undergraduate Society — Sept 2013 – Mar 2017
President and EUS Councillor

- Worked on building renewal project engaging students in feedback on design and priorities.
- Conducted several curriculum consultations with our council to improve the ENPH program
- Participated in council passing/amending policy, worked to distribute EUS awards.

UBC Solar — Sept 2013 – Mar 2017
Mechanical Team Lead and Co-Captain

- Lead mechanical team in design and fabrication, in-charge of a 15 person team. Responsible for effective workflow, managing communication, and ensuring progress on various design and fabrication related goals.
- Used SolidWorks to design motor mount, steering components, and brake housing to ASC specifications.
- Designed several candidates for the suspension of the vehicle, from which one was selected and fabricated.
- Conducted FEA on chassis using ANSYS, to verify hand calculations and ensure safety.

Alma Mater Society, Sustainability May 2015 - May 2016

Sustainability Projects Manager

- Worked with the chief architect to implement a dashboard system for the AMS Student Nest.
- Coordinated several capstone and university research projects in sustainability.
- Worked with operational staff to address waste management needs of the Nest.
- Sat on committees at UBC to understand/address challenges like energy and student engagement.

TRIUMF Aug 2012

Communications and Strategic Planning

- Worked under Dr. Tim Meyer to understand the functioning and resource allocation of the lab.
- Projects involved drafting strategy memos, weighing in on public engagement strategies, and planning/executing events like the Barn-Raising as well as a poster session for the Women in Science conference held at UBC.
- Practiced skills of contingency planning, publicity, and technical writing.

projects

Low Cost Syringe Pump BC Children Hospital || July 2017 – January 2018

- Created a low-cost syringe pump to improve anesthesia delivery in low-resource surgery environment, with input and consultation from field experts.
- Final component of $25, for flow-rates between 10-200 mL per hour.
- Designed 3D printable chassis, for use with generic syringe, actuated pneumatically controlled by a Raspberry Pi0. Implemented novel feedback scheme using the drug syringe as variable capacitor.

Autonomous Gantry Robot for Crop Monitoring Ecoation Innovative Solutions Inc. || Sept 2016 – May 2017

- Designed x, y, z adaptable/scalable gantry robot for moving a crop monitor around a greenhouse.
- Uses open source software for control, and relies on stepper/PMDC motors for actuation.
- The project was implemented at Van Belle nursery to improve their tree nursery analytics.

Engineering Physics Robot Competition Engineering Physics 253 || Apr 2015 – Aug 2015

- Worked in a team of 4 to design and build a fully-autonomous robot to navigate an obstacle course and retrieve targets.
- Programmed, tested, debugged a PID driving control, that switched between following a black line and IR emitters, to locate and mechanically lift targets out of the course.
- Iteratively built mechanical and electronic components including a sheet metal chassis, a main arm, a supplemental arm, several filtering circuits, the micro-controller, and the gear/drive train.

Other Projects Self-Guided

- Co-coordinated UBC chapter of Student Energy: worked on policy recommendation for electric vehicles at UBC, and cohosted the Powering Our Future conference on the future of energy with UBC350.
- Co-authored a scientific study “Isolation, Identification and Initial Fermentative Characterization of Fourteen Wild Yeast Strains from Pinot Noir Grapes Grown in the South Okanagan, British Columbia.”
- Co-created limemap.com using JS and HTML5, prototype collaborative POI database plotter: collection of objects and services located inside buildings, areas, and public spaces. Makes use of Google Maps API.
- Built a <$100 PCR machine using Arduino platform and prototyped parts.
- Modeled a speed bump power generator in MATLAB, and fabricated a working prototype for a bicycle.

awards

University of British Columbia Major Entrance Scholarship: $40,000 scholarship to attend UBC, the maximum possible
Roy Nodwell Prize For a senior capstone project project showcasing originality, professionalism, and industrial relevance
APSC 2018 Rising Star Chosen by Applied Science UBC for making meaningful contributions to the betterment of society
Trek Excellence Scholarship For continuing scholastic achievement
EUS Emblem Award - For contributions to the undergraduate governing society