# Yosamin Esanullah

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## SKILLS

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| **Technical Software:** | Simulink, SolidWorks, (CAD/CAM), MS Project, Gantt Chart |
| **Programming:** | Python, C++, Java, R, HTML, CSS, MATLAB, React |
| **Project Management:** | Procurement processes, Threat and Risk Analysis, Lifecycle Analysis |
| **Languages:** | English (Native), French (DELF B1 level), Farsi/Persian (Conversational) |

## EDUCATION

**University of British Columbia** Apr. 2025

***Bachelor of Applied Sciences – Mechanical Engineering, Aerospace Concentration***

Schulich Leader Scholarship - $100,000 CAD Award

## TECHNICAL WORK EXPERIENCE

**Canadian Space Agency (CSA)** *Longueil, QC, Canada* Sept. 2022 - Present

***Engineering Intern, Deputy Project Manager***

- Coordinated cross-functional and interdisciplinary teams according to government frameworks, from definition to closeout phases of the project lifecycle across the Space Science and Technology department.
- Supported the technical and logistical operations for the 2022-2023 STRATOS Balloon Launch Campaign, ensuring mission and safety reliability through rigorous S&MA reviews.
- Conducted Threat and Risk Analysis (TRA) for a quantum encryption satellite, assessing vulnerabilities and developing mitigation strategies for secure satellite communication.
- Produced the Requisition for Proposal (RFP) for the design-build of a Lunar Analogue Terrain Project, led the contractor meetings to evaluate technical drawings and deliverables, and completed Gender Based Analysis (GBA) for the project.
- Stepped in as Deputy Project Manager, ensuring successful project execution, risk mitigation, and alignment with CSA mission objectives through technical coordination, budget tracking, and stakeholder communication.

**SNOLAB, Cryogenic Underground Testing (CUTe) Facility** *Lively, ON, Canada* May 2022 – Sept. 2022

***Dark Matter Student Researcher, Facility Operations—Instrumentation and Data Analysis***

- Piloted, installed, and commissioned a high-precision infrared radiation calibration system for low-mass dark matter detection, troubleshooting cryogenic instrumentation for optimal system performance.
- Applied Python-based data analysis to interpret low-temperature superconducting nanowire behavior under extreme conditions, using multimeters to calibrate, validate, and troubleshoot discrepancies in newly installed equipment.
- Troubleshot sensitive equipment in the freezer through a Class 3000 cleanroom, under 30% pressure in a mine located 2 kilometres underground.
- Developed extensive knowledge and competency of the facility's design and procedures, quickly adapting to the underground lab environment.

## AEROSPACE & RESEARCH PROJECTS

**Canadian Reduced Gravity Experiment Design Challenge** Oct. 2024 - Current

***Team Captain, Space MENs***

"Fluid Behavior and Droplet Dynamics of Tampon Removal in Microgravity"

- Piloting a pioneering research project to investigate fluid droplet dynamics of simulated blood in microgravity environments to assess the effectiveness of current menstrual solutions for female astronauts.
- Leading the design and fabrication of an actuator-based testing apparatus to evaluate fluid dispersion according to national flight readiness techniques, to perform the experiment aboard a Falcon 20 parabolic flight campaign.

- Integrating high speed imaging and computational fluid dynamics (CFD) for experimental data acquisition and analysis, then developing machine learning-based post-processing techniques for image classification and droplet behavior.
- Conducting vibration, impact, pressure, and electrical testing to validate durability and functionality, and to receive flight readiness certification.
- Coordinating an interdisciplinary team of undergraduate students to help design, manufacture, and test the experimental payload to prepare for flight readiness certification by National Research Council of Canada.

**Capstone Project – Dominion Radio Astrophysical Observatory (DRAO) and National Research Council** Sept. 2024 - Current
***Mechanical Lead – Structural Housing for Cell Radio Frequency Detector***

- Designing and analyzing a robust weatherproof enclosure for a radio-frequency detection system, ensuring structural integrity and electromagnetic shielding.
- Applying finite element modeling (FEM) and materials selection analysis (thermal conductivity, RF shielding, corrosion resistance) to optimize housing performance against radiation leakage and extreme weather patterns.
- Managing the integration, on-site testing, and diagnostics of RF components to ensure signal stability and eliminate radio interference with telescope arrays, preserving the integrity of astronomy data from the observatory.

**Canadian Stratospheric Balloon Experiment Design Challenge – Canadian Space Agency SRATOS Campaign** Oct. 2021 – Aug. 2022
***Team Captain, UBCO StratoNeers***
"Efficiency of Silicon Semiconductor Designs on Mitigating Cosmic Radiation Induced Single Event Upsets (SEU) in Microcomputers

- Spearheaded the end-to-end development of a high-altitude experimental payload, achieving a successful stratospheric launch and recovery complete with in-flight data acquisition.
- Optimized thermal systems within payload using controlled exothermic reactions to ensure functionality of electronic components in high altitude, low temperature environments.
- Leveraged lightweight insulating materials for payload structure and carbon fibre protective systems for individual electronic components.
- Secured over CAD 17,000 in competitive grant funding, efficiently managing procurement, prototype assembly, and rigorous pre-flight testing phases (vibrational, drop, temperature, and pressure testing) phases to receive flight safety certificates for CSA.
- Directed post-flight data analysis using Python for-loops, checking if randomized binary data installed in various cell architecture data types were better able to mitigate bit flips caused by ionizing cosmic radiation.

## OTHER WORK EXPERIENCE

**Pakpour Labs, University of British Columbia** *Kelowna, BC* May 2021 – May 2022
***Undergraduate Research Assistant, Biomedical Microbiome Laboratory***

- Designed and implemented a year-long pilot program to investigate seasonal variations in airborne microplastics, collecting and analyzing weekly samples under rigorous field conditions.
- Ensured proper handling and safe storage of sensitive biological and environmental samples in a -80-degree Celsius freezer.
- Collaborated with interdisciplinary teams, including fellow researchers and lab members, to refine protocols and troubleshoot sampling errors.
- Delivered monthly progress presentations to project collaborators, synthesizing findings and proposing actionable next steps.

## VOLUNTEERING

**Phoenix Newspaper, Students Union at University of British Columbia** *Kelowna, BC* Mar. 2024 – Jan. 2025
***Writer, Science & Technology***

- Promoted science literacy by writing weekly articles on science and technology topics, ensured that the context was accurate, engaging, and accessible to diverse readership.
- Conducted interviews with local science teams, researchers, and industry experts to highlight innovative local projects.
- Collaborated closely with editors, photographers, illustrators, and participate in editorial team meetings to pitch ideas.

**TELUS World of Science Edmonton** Apr. 2017 – Jan. 2023
*Gallery Interpreter Volunteer*

- Developed and delivered interactive STEM presentations on astronomy, physics, chemistry, and biology, making complex concepts accessible to diverse audiences.
- Engaged with thousands of visitors, adapting scientific explanations for different ages and backgrounds to foster curiosity and STEM literacy.
- Inspired future scientists and engineers by leading hands-on activities and presenting life science demonstrations.

## PUBLICATIONS

Esanullah, Y., Trivedi, J., Nwani, B., & Barth, M. (2019). Optimal zwitterionic surfactant slug for an improved oil recovery in oil wet carbonate rocks – Silurian dolomite. *Alberta Academic Review, 2*(2), 27-28. https://doi.org/10.29173/aar40

Esanullah, Y. (2024, November 30). *Houston, we have a period: Researching what no one talks about*. *The Phoenix News*. https://www.thephoenixnews.com/posts/houston-we-have-a-period-researching-what-no-one-talks-about

Esanullah, Y. (2024, April 16). *Imposter syndrome and the struggles of women in scientific academia*. *The Phoenix News*. https://www.thephoenixnews.com/category/science-technology

## AWARDS

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| Jim Pattison Blue & Gold Bursary Okanagan ($4K) | Dec. 2024 |
| UBC Okanagan General Bursary (5.7K) | Dec. 2024 |
| First Place – AI for Social Good Hackathon Competition ($1K) | Sept. 2024 |
| First Place – Girls in Tech (GiT) Hack-Attack Competition ($500) | Feb. 2024 |
| First Place – Western Canada AquaHacking Competition ($20K) | Sept. 2021 |
| Professional Activities Fund – UBC Okanagan ($10K) | Apr. 2022 |
| Tuum Est Fund – UBC Okanagan ($3K) | Feb. 2022 |
| Innovation, Entrepreneurship, & Impact Fund – UBC Okanagan ($5K) | Apr. 2021 |
| Schulich Leader Scholarship ($100,000) | Apr. 2020 |
| Alexander Rutherford Scholarship ($2500) | Apr. 2020 |
| LORAN Regional Scholarship ($2000) | Mar. 2020 |
| Michael A. Strembitsky Award of Excellence ($2500) | Mar. 2020 |
| The Spirit of Dr. Armour Award – University of Alberta, WISEST Program | Aug. 2019 |