Nikhil Patel

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Objective

My name is Nikhil Patel, and I am an Electrical Engineering student at the University of Saskatchewan with a strong interest in real-world systems. Experienced in hands-on engineering through multidisciplinary design teamwork, with a focus on space systems, robotics, and assistive technologies. Seeking internship opportunities in aerospace, robotics, or related fields to further develop technical skills and contribute to impactful engineering projects.

Education

University of Saskatchewan, Saskatoon Sk, Canada — 09.2023 – Current

Bachelor of Science in Electrical Engineering -

Relevant Courses: AutoCAD, Data Structures & Algorithms (Python, UNIX, C), Statistics and Probability (Excel), Signals and Systems (MATLAB), Digital Electronics, Electromagnetism and Waves, Mechanics.

Skills

CAD & Design:	Fusion 360, AutoCAD, OnShape, SolidWorks, Inventor, SketchUp, Revit
Simulation & Analysis:	OpenRocket, SolidWorks FEA, ANSYS, Fusion 360 Simulation,
Embedded & Programming:	C/C++, C, MATLAB, Python, HTML5/CSS,
Systems & Platforms:	Microsoft Office, Google Suite, Autodesk Online, BLE, IOT, UART, UNIX

Leadership Experience

President – University of Saskatchewan Space Design Team (USST) — 09.2025 – Present

Leadership, Project Management, Systems Coordination, Operations, Sponsorship

- Lead a multidisciplinary engineering team working on rocketry and Cube Satellite projects acting as the primary administrative lead.
- Work closely with sub-teams to make sure timelines, system requirements, and objectives are aligned, utilizing regular technical and systems level meetings.
- Handle most of the teams' operations side including sponsorship, outreach, budgeting, and working with university faculty to ensure the team has access to the resources required for the projects.
- Build organizational structure for how we document work and run projects to ensure seamless project and role handoff.

Propulsion Lead – Rocketry Division, (USST) — 01.2025 – Present

Technical Leadership, Systems Integration, Mentorship, Engineering Coordination

- Led the propulsion sub team by delegating work, supporting team members, and ensuring we stay on track from concept to competition.
- Work with other sub-teams to ensure the propulsion system integrates effectively with the rest of the rocket.
- Review designs, simulations, and test results to guide decisions and improve reliability and performance.
- Help reinforce safe design and testing practices so everything is done safely and effectively with sufficient documentation for future record.

Work Experience

Summer Camp Instructor – SAIT Polytechnic (Technology Camps) | Reference 06.2023 – 08.2025

HTML/CSS, Python, Arduino, Raspberry Pi, VR/MR Systems, 3D Modeling, 3D Printing, Robotics, Instruction,

- Delivered hands-on instruction in programming, electronics, and digital technologies including Arduino, Raspberry Pi, and introductory robotics platforms, guiding students through structured technical projects.
- Taught emerging technologies such as virtual and mixed reality, along with 3D modeling and additive manufacturing with an emphasis on practical application and innovative design.
- Help develop skills in technical communication, rapid problem-solving, and adapting engineering concepts for diverse age groups (grades 4-12) in a project-based learning environment.

Camp Councillor – Westside Recreation Centre (Sports Programs) 06.2022 – 08.2022

Communication, Patron management, Instruction,

- Led and supervised youth camps in basketball, badminton, and ice skating, focusing on skill development and safe participation.
- Managed group coordination, conflict resolution, and risk assessment to maintain a safe environment during physical activities.
- Strengthened leadership, communication, and real-time decision-making skills in dynamic, high-responsibility settings.

Tutor – Kumon Math & Reading Centre 12.2021 – 08.2022

Mathematics Instruction, Problem Solving, Mentorship

- Provided individualized instruction in mathematics and reading, supporting students in developing problem-solving skills and academic concepts.
- Assisted in grading, progress tracking, and curriculum guidance, ensuring consistent academic improvement and adherence to structured learning methods.
- Developed strong attention to detail and the ability to break down complex problems into step-by-step solutions

Grants & Scholarships

CaNoRock Andøya Space Opportunity – 2024 2024

- Selected for the Andøya Space CanoRock Opportunity, participating in an international collaboration in Norway to design, build, and launch a student sounding rocket alongside Canadian and Norwegian university students.

Alexander Rutherford Scholarship 2023

- Amount awarded: $2500

Licences, Certifications, and Official Training

Student Suborbital Payload Development Training Series – Canadian Space Agency 01.2026 – 05.25.2026

- Participated in the Canadian Space Agency's Student Suborbital Payload Development Series, a program supporting university teams developing suborbital and high-altitude payload systems.

Standard First Aid & CPR/AED – Canadian Red Cross 06.19.2025 – 06.20.2028

- Credential ID: 106190594

Team Projects

Project UP (High Power Rocketry) – Launch Canada 2025 09.2024 – 09.2025

Propulsion Team Lead | OpenRocket, SolidWorks, ANSYS, Excel | USST

- Led the propulsion sub-team for USST's high power rocket "Project UP" by defining requirements and coordinating design, analysis, manufacturing and testing of propulsion structures.
- Utilized CAD (Fusion 360, SolidWorks) tools to ensure proper integration of propulsion sub system.
- Verified designs using Fusion 360, and ANSYS simulation to ensure safety factor of parts under stress, as well as trajectory and aerodynamic flow simulations to validate performance trade-offs.
- Was solely responsible for the design and creation of a boat-tail and interfacing components, increasing overall apogee by +15% (~3000 ft) through drag reduction.

Thor & Loki (Robotics) – First Robotics Competition 2023 10.2022 – 06.2023

Drivetrain Systems Lead | Fusion 360, Excel, Manufacturing, CNC | 4627 Manning Robotics

- Led drivetrain development for a 40-member team, managing a sub-team of 5 to design and deliver both an optimized tank drive (8:1 ratio) and the team's first swerve drive prototype.
- Performed torque–speed analysis and gear ratio optimization using motor specifications and Excel modeling to balance acceleration and pushing performance.
- Directed CAD design, fabrication, and system integration, delivering competition-ready drivetrain systems for the 2023 season.

Individual Projects

ARTS (Open Source "Amateur Rocketry Telemetry System") 01.2026 – Current

C++, Python, Advanced Modeling & Simulation, OpenRocket, ANSYS, Excel

- Designed, tested and flew a high-power rocketry flight computer that utilizes a microcontroller along with various sensors for rocketry guidance, navigation and control (GNC).
- Implemented data logging systems and flight state machines for tracking and analyzing flight behavior.
- Developed various bench tests to ensure all systems preform as defined to meet safety requirements.
- Applied embedded architecture, sensor integration, and real-time processing for aerospace applications.

OpenCV Detection Platform (Computer Vision + Actuation System) 01.2024 – Current

C++, Python, Fusion 360, FDM 3D Printing, Mechanical Design, EDA/CAD, DFM

- Developing a computer vision system using Python and OpenCV to detect objects in real time and drive motor actuation, inspired by industrial detection-targeting systems.
- Designed a modular pipeline separating detection, tracking, and actuation to improve scalability, debugging, and iterative development.
- Expanding skills in computer vision, control integration, and real-time system design through ongoing implementation and testing.

SimuLight Sunrise (Open-Source Smart Alarm System) 09.2024 – 08. 2025

C++, Python, Fusion 360, Excel, FDM 3D Printing, Mechanical Design, EDA/CAD, DFM

- Designed and built an ESP32-based sunrise alarm system to replace harsh traditional alarms, integrating MOSFET-controlled 12V lighting, RTC backup (DS3231), and Wi-Fi scheduling for reliable operation with or without network access.
- Developed embedded firmware (C++) and supporting Python tools implementing configurable brightness ramp profiles using non-linear (Bezier-style) curves, along with JSON-based scheduling architecture for flexible feature expansion.
- Gained experience in power electronics (PWM control, MOSFET switching), embedded systems design, and system-level reliability, achieving smooth flicker-free dimming and validating performance through small-scale user testing.

Arduino-Based Macropad (Custom USB HID Input Device) 09. 2021 – 06. 2026

C++, Python, Fusion 360, Excel, FDM 3D Printing, Mechanical Design, DFM

- Built a customizable macro keypad using an Arduino Micro with native USB HID, addressing limitations of commercial devices by enabling fully open, cross-platform, and hardware-modular design.
- Developed firmware in C++ supporting multi-profile macro storage.
- Strengthened skills in embedded programming, hardware prototyping, and human-interface design through PCB development, 3D design, and system validation across Windows, macOS, and Linux.

Research Experience

Independent Research – SimuLight Sunrise (Circadian Lighting System) 2024 – 2025

Embedded Systems, Power Electronics, Human-Centered Design

- Researched circadian lighting principles, PWM dimming, and non-linear brightness ramping to design a sunrise alarm that provides smooth, natural light transitions and maintains reliable operation without network dependency.
- Conducted small-scale user testing (n = 6), evaluating different ramp profiles and timing strategies across varying locations to refine system behavior and improve overall wake-up experience.

Volunteer Experience

Child Care & Youth Volunteer – Westside Recreation Centre 09.2018 – 12.2021

Interests

Engineering design, rocketry, RC systems, and mountain biking

Per aspera ad astra

“Through hardships to the stars”