

# Nikhil Patel

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## EDUCATION

### University of Saskatchewan, Saskatoon, SK

B.Sc. Mechanical Engineering

Graduating: May 2028

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

## PROJECT WORK

### Project Up (Rocketry) – Launch Canada 2025: Propulsion Team Lead | OpenRocket, SolidWorks, ANSYS, USST

- Led the propulsion subsystem for USST's high power rocket "Project UP" by defining performance requirements (**thrust, burn time, chamber pressure**) and coordinating **design, analysis, and testing** for competition.
- Performed **CAD**-based design and **iteration** of propulsion-adjacent structures using **SolidWorks** and **Fusion 360**, ensuring **integration** with airframe, recovery, and avionics subsystems, supported by **stress, trajectory, and aerodynamic/flow** simulations to validate propulsion performance.
- Solely designed a boat-tail component, increasing overall apogee by +15% (~3000 ft) through drag reduction.

### Sunrise Simulight | Fusion 360, PCB Design, Electrical Wiring, IOT, BLE, Python

[Source](#)

- Built an Arduino-based IoT sunrise lamp using recycled LEDs and **PWM** control to ramp lux and color temperature for circadian-friendly wake-up lighting.
- Developed embedded firmware and **Python** configuration tools using **UART/BLE** and **JSON** control for scheduling, tuning, and future app **integration**.
- Designed power electronics with **MOSFET** dimming, soft-start, and **thermal protection**, achieving ~85% **system efficiency** and stable **high-current** operation. Working towards **embedded hardware/PCB design**.

### Arduino Macropad | Fusion 360, COTS Engineering, Electrical Circuitry, Prototyping, IOT, MATLAB,

[Source](#)

- Developed Arduino/C++ **USB HID** firmware for a custom keyboard, implementing multi-profile storage, per-key macros, and configurable debounce for **low-latency**, cross-platform input automation.
- Designed and integrated electronics hardware including a hot-swappable switch **PCB**, rotary encoder support, addressable lighting, budgeting for **cost efficiency** and **serviceability**.
- Validated system performance through **functional testing** and **deployment**, achieving plug-and-play compatibility on **Windows/macOS/Linux** (standard HID), and rapid assembly via a **3D-printed** enclosure and **modular BOM**.

## RELEVANT EXPERIENCE

### President / Chief Safety Officer / Rocket Propulsion Lead – USST

Sep 2024 – Current

University of Saskatchewan Space Design Team (USST).

- **Systems / Project Leadership:** Led bi-weekly executive meetings and systems coordination for multi-disciplinary Rocketry and CubeSat engineering teams, maintain meeting minutes/action tracking, and run team activities to drive continuity across multi-project engineering teams.
- **Systems Administration:** Coordinate with University faculty for facilities access, manage critical documentation regarding team structure, ratification, and lab use.
- **Financial Management:** Coordinate banking access, support monthly statement cross-checks/reconciliation, verify finances are on track, and manage sponsor/donor workflows (sponsorship templates, benefit fulfillment, post-competition thank-you packages).
- Served as CSO developing safety training and protocols aligned with hazardous-materials standards, proactively mitigating risks, and ensuring full safety compliance across design, build, and competition phases.

## PROFESSIONAL WORK

### Summer Camp Counselor - Southern Alberta Institute of Technology (SAIT).

Calgary, AB

- Delivered inclusive, project-based instruction in HTML, CSS, and JavaScript to students aged 9–17, designing accessible lesson plans and example projects to support diverse learning needs, including students with disabilities.

## TECHNICAL SKILLS

**CAD & Design:** Fusion 360, AutoCAD, OnShape, SolidWorks,

**Simulation & Analysis:** OpenRocket, SolidWorks FEA, ANSYS, Fusion 360 Simulation,

**Embedded & Programming:** Arduino variant C/C++, C, MATLAB, Python, HTML5/CSS,

**Systems & Platforms:** Microsoft Office, Google Suite, Autodesk Online, BLE, IOT, UART, UNIX