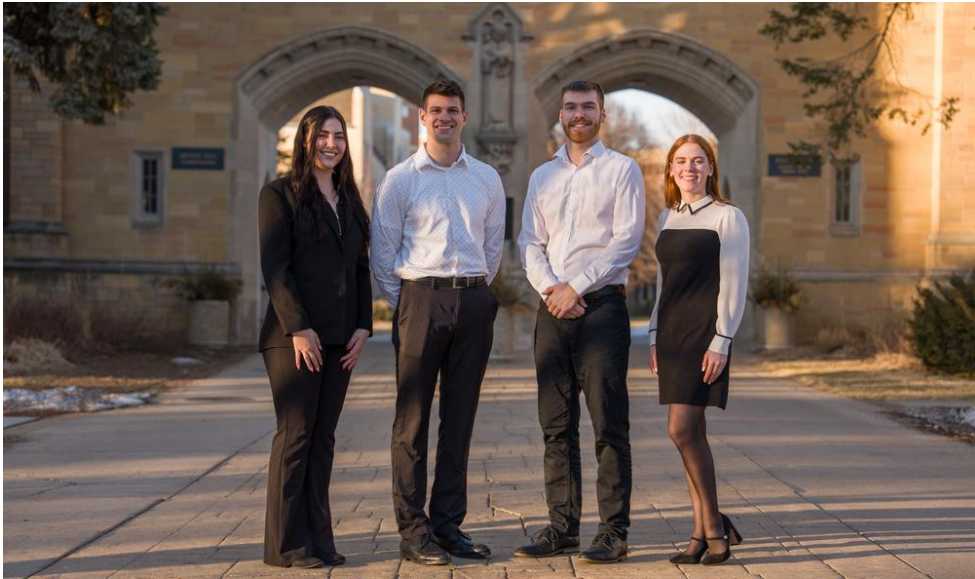


# Smart Off-Road Lighting



From left to right: Maya Kreidler (EE), Charlie Millhollin (EE ), Braedon Fitzpatrick (ME), Erin De Witt (CpE)

# POLARIS

## TEAM 23

### INDUSTRY REPRESENTATIVE

Ryan Nguyen

### FACULTY ADVISOR

Andrew Tubesing

## PROJECT BACKGROUND & DESIGN GOAL:

Our team was tasked with innovating upon the current off-road vehicle lighting. We designed our vision for the next generation of products using smart features, communication between lights, and a combination of accent and projection lighting. **The goal was to create a smart lighting system that adapts to user needs and integrates into Polaris vehicles.**

## DESIGN OUTCOMES:

The design process started with a market research study to understand off-road vehicle trends and customer interests through real users. Then, we reverse engineered a currently offered smart lighting product. We upgraded the housing, mounting, electrical hardware, software, and wiring to implement new features such as:

- Customizable colors and display patterns for accent lighting
- Modular mounting system
- Plug-and-play setup for ease of installation & expansion

## DESIGN CONSTRAINTS:

- **COMPATIBILITY** System shall be compatible within vehicle ecosystem
- **MARKET SEGMENT** System shall be aligned with off-road vehicle market trends
- **FLEXIBILITY** System shall be customizable to user needs
- **LIGHTING** System shall allow users to see and be seen in low visibility environments



Polaris RZR Pro R 2026



Final Build Platform of Smart Light