Shubh Singh Summer 2026

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EDUCATION

University of Illinois at Urbana-Champaign **Expected May, 2028**
Bachelor of Science in Mechanical Engineering, James Scholar, 3.94 GPA *Champaign, IL*

- **Relevant Coursework:** Solid Mechanics, Dynamics, Design for Manufacturability, Thermodynamics, CAD

EXPERIENCE

Illini Solar Car **April. 2025 – Present**
Mechanical Operations Lead *Champaign, IL*

- Leveraged composite analysis to research & determine optimized layup schedule for carbon fiber vehicle shell & chassis
- Utilized Finite Element Analysis to examine affect of suspension loads on composite structure of vehicle
- Lead **60+ mechanical team members** through composite manufacturing process of a solar vehicle that achieved **1st place at Formula Sun Grand Prix 2025**

Brakes Project Lead *Sept. 2024 – Feb. 2025*

- **Led the complete design and fabrication** of a new brake pedal assembly, achieving a **25% weight reduction** through FEA analysis and hand calculations while maintaining safety margins.
- Secured sponsor material support from multinational companies, **exceeding budget expectations by 27%**
- Designed top-mounted brake assembly with custom hall effect sensor integration that improved driver comfort and pedal actuation

Rear Suspension Project *Mar. 2025 – Sept. 2025*

- Contributed to the design, analysis, and optimization of a single trailing arm rear suspension, achieving **50% weight reduction** from previous generations
- Led design for manufacturability effort to ensure low machining costs while maximizing weight optimization

Race Team Mechanical Pit Crew | Bowling Green, KY *May 2025 – Jun. 2025*

- **Manufactured last-minute custom brake pedal** via manual mill to ensure the qualification of the vehicle for competition
- **Coordinated & Serviced** suspension, wheel & spindle assembly, & brake assembly repairs, ensuring fewer mechanical failures during competition
- Contributed to the engineering, fabrication, & repair of a solar vehicle that **outperformed 32 international teams**, earning **1st place at Formula Sun Grand Prix 2025**

Ewoldt Research Group **Jan. 2025 – Jul. 2025**
Lab Assistant *Champaign, IL*

- Leveraged Python to create G-Code for prototype polymer extrusion embedded 3D printing method
  - Coded visualization functions that traced toolpath of generated G-Code in effort to reduce waste & improve efficiency
- Designed toolpaths for complex geometries to ensure polymer adhesion & avoiding overlap in movement of nozzle head
- Researched extrusion of thermoset polymer in viscous gel that eliminates need for traditional 3D printing supports

TECHNICAL SKILLS

- **CAD:** Siemens NX, Fusion 360
- **Analysis & Simulation:** Ansys Structural, Ansys ACP, Ansys Structural Optimization (Topology Optimization)
- **Programming Languages:** Python, MATLAB, Java**,** CNC G-Code
- **Prototyping:** CNC Lathe & Router, Manual Mill & Lathe, Waterjet, 3D Printing