

Kailash Gupta-Verma

(669) 240-3176 | g.kailash@wustl.edu | [linkedin.com/in/kailash](https://www.linkedin.com/in/kailash)

EDUCATION

Washington University in St. Louis

B.S. in Mechanical Engineering; Minors in Computer Science and Robotics

St. Louis, MO

May 2027

EXPERIENCE

WashU Musculoskeletal Soft Tissue Lab

Research Engineer

Jul 2025 – Present

St. Louis, MO

- Developed the MeshAlyzer, a benchtop platform that reproduces breathing- and cough-induced pressures to evaluate hernia mesh repairs
- Conducted porcine-tissue experiments measuring pressure response, mesh deformation, and fixation stability under cough-level loading
- Redesigned the tissue-clamping system to improve modularity, sealing, and repeatable specimen positioning
- Improved pressure-transducer accuracy by 25% and reorganized system electronics to eliminate Raspberry Pi brown-outs
- Collaborated with surgeons and research staff to translate experimental findings into improved mesh-testing and repair strategies

Johnson & Johnson MedTech

Robotics Hardware Intern

May 2026 – Aug 2026

Mountain View, CA

- Architected a thermal test platform for simulation hardware supporting the OTTAVA robotic surgical system
- Designed and prototyped a modular chassis to evaluate five cooling configurations using custom fan mounts, lofted ducts, and controlled electronic layouts
- Developed a CFD model of system airflow and heat transfer to guide fan, duct, and component placement
- Reduced the surrounding temperature of thermally sensitive components by 45% through iterative prototyping, testing, and simulation

Fulfil Solutions

Mechanical Engineering Intern

May 2025 – Aug 2025

Mountain View, CA

- Led development of a compliant spring mechanism for securing grocery bags, reducing initial tearing by 35%
- Built and tested 50+ prototypes using 3D-printed components, custom steel flexures, and off-the-shelf hardware
- Applied beam theory, GD&T, and FEA to validate deflection limits and achieve a projected 10M+ cycle life
- Collaborated with test and manufacturing engineers to mature the mechanism for production two weeks ahead of schedule
- Designed robotic assembly jigs and vision mounts that increased placement accuracy by 15% and camera field of view by 15 degrees

PROJECTS

Teleoperated Retrofit Lawn Mower | SolidWorks, Raspberry Pi, Arduino, C++

Jan 2026 – Present

- Reverse-engineered a commercial lawn mower in SolidWorks to design a nondestructive drive-system retrofit
- Designed and tested 15 iterations of 3D-printed reduction gearboxes for operation across varying terrain
- Developed a C++ state machine for motor control, command handling, and sensor integration
- Integrated drive motors, motor controllers, wheel encoders, and remote commands into a complete electromechanical architecture

WashU Mars Rover – Arm Design Lead | SolidWorks, Machining, System Integration

Aug 2024 – Present

- Led a three-person team through the design and integration of a five-degree-of-freedom robotic arm and claw
- Evaluated multiple claw architectures and delivered a competition-ready subsystem within two months
- Machined 20+ precision components using manual mills and lathes while maintaining critical assembly tolerances

SKILLS & INTERESTS

Design & Analysis: SolidWorks, Creo, Onshape, Fusion 360, Altium, CFD, FEA, GD&T

Manufacturing: Manual Mill, Lathe, 3D Printing, Soldering, Mechanical Assembly

Programming & Controls: C++, Python, MATLAB, Java, Arduino, PHP, AWS EC2, Raspberry Pi

Interests: Surfing, Hiking, South Asian Dancing, Creative Programming, Thrifting