

Krish Vatsa

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EDUCATION

University of Illinois, Urbana Champaign, IL

May 2029

Bachelor of Science, Major in Mechanical Engineering, Minor in Computer Science

GPA: 3.96

EXPERIENCE

Princeton Identity

June 2026 - August 2026

Product Design Intern

- Designed mechanical enclosures in Fusion 360 for 3 biometric-authentication hardware products, integrating cameras, PCBs, sensors, wiring, and mounting features while balancing fit, assembly, and manufacturability
- Designed an auto-focusing calibration rig (integrating motors, grippers, and more) to automate iris-detection camera calibration, replacing a manual process and improving calibration accuracy and time by 30%
- Engineered a card-reader attachment integrating into an existing product's housing with no modification to host geometry, designing mounts and wire routing that reduced installation to 2 screws and a single wire connection

Mettler Toledo

December 2025 - January 2026

Research and Development Intern

- Designed and modeled pressure-sensor connectors in PTC Creo, refining seal features and reducing pressure leakage by 80% for leaking sensors in controlled bench testing across 5 trials
- Completed 10+ iterative design revisions, performing tolerance analysis and fit verification to improve sealing reliability in pressurized assemblies, resolving 4 fit issues and increasing first-pass assembly success to 100%
- Executed 20+ design verification/validation cycles, collecting 6 measurements per run and comparing baseline vs. updated design to confirm improvements and isolate failure modes

PROJECTS

5-DOF Autonomous Robotic Arm

June 2026 –August 2026

Collaborative Project (with a Georgia Tech ME student)

- Co-designed the arm's mechanism and developed the OpenCV (Python) vision pipeline, engineering a two-pose triangulation method to solve 3D pick-target depth from a single wrist camera without a known table plane
- Integrated the hardware stack (servo control, serial bus communication, wiring, and safety-capped motion limits) and paired ruler-survey calibration rebuild with vision systems to cut positioning error 12x (73.1mm to 6.0mm)
- Tuned closed-loop visual-servo control across the full vision-to-hardware pipeline, helping the arm reach 100% ground-level and 80% elevated autonomous pick success

LEADERSHIP & ACTIVITIES

Off-Road Baja Illini SAE

August 2025 - Present

Drivetrain Engineer, Subsystem Redesign Researcher

- Led redesign efforts of 2 components (spool differential and dog clutch), producing 5+ updated PTC Creo models/drawings to improve durability while reducing weight by 30% and maintaining manufacturability
- Collaborated with a cross-functional team to design and refine drivetrain systems for an off-road vehicle, aligning packaging constraints and interfaces across 3 adjacent subsystems
- Ran FEA on 3+ iterations and 2-4 load cases, using stress/deflection results to finalize geometry pre-fabrication

FRC Team 1403 Cougar Robotics

September 2021 - April 2025

Mechanical Captain, Robot Operator

- Directed a 15-member team to design and build competition-ready robots, earning 3 district-level awards
- Oversaw manufacturing and assembly of 500+ aluminum robot parts using machines like lathe and mill
- Reduced manufacturing and assembly time by 20% through process optimization and improved coordination

Theraprints

April 2023 - April 2025

Head of Engineering & Operations

- Designed, prototyped, and delivered 10+ custom 3D-printed rehabilitation devices to 2 partner centers
- Produced 5+ prototype iterations, improving ergonomics and durability while maintaining quality across users
- Coordinated feedback with 2 centers, converting observations into measurable design updates and final releases

SKILLS

CAD & Manufacturing: Fusion360, PTC Creo, Solidworks; 3D Printing, Mill, Lathe, CNC

Programming: Java, Python, OpenCV