

# Bibek Bhatta

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## Summary

Mechanical Engineering undergraduate with 6 plus years of experience applying **Python**, **machine learning**, and **computer vision** to **engineering** and **robotics** focused problems. Strong background in **electronics**, **3D printing**, and **embedded systems**, with hands on experience in **perception**, **data driven modeling**, and **control-oriented systems**. Experienced with **FastAPI**, **PyTorch**, **OpenCV** and **scientific computing**, and highly interested in **robotics**, **UAV systems**, **aerodynamics**, and **autonomous control system design**.

## Experience

### Design Lead

Robotics Club at Mississippi State University / Starkville, MS

January 2026 - Present

- Modeling aerodynamic airframes, motor mounts, and a vibration-dampened flight controller housing in Onshape; manufactured prototypes using FDM 3D printing in PETG filament.
- Engineering a standardized library of modular mechatronic subsystems, encompassing high-reduction cycloidal gearboxes, FDM-optimized differential drivetrains, 3D printable transmission shafts, and custom PCBs, to establish a reusable hardware architecture to accelerate cross-platform development for all club competitions.

### Undergraduate Researcher

Department of Sustainable Bioproducts / Starkville, MS

March 2025 – Present

- Designing an active-cooled, dust-resistant enclosure for an NVIDIA Jetson Orin Nano to manage thermal loads during edge-computing tasks.
- Deploying computer vision algorithms directly onto the embedded Jetson hardware to detect wood chip moisture content in real-time.
- Modeling a kinematic sensor mount in Onshape for repeatable camera positioning during physical image data collection.

### Undergraduate Researcher

Department of Plant and Soil Sciences at Mississippi State University / Starkville, MS

October 2025 – February 2025

- Designed and 3D-printed an automated mechanical seed-feeder to stream samples into a camera's field of view at a controlled feed rate.
- Developed a real time **ArUco** calibrated **computer vision** seed measurement system and modular Python application, supporting **CNN** based seed and nodule analysis for PhD research

### Machine Learning Developer

Agrisense / Kathmandu, Nepal

February 2023 - June 2023

- Developed and implemented a custom **CNN-based image processing model** utilizing **Scikit-learn**, **NumPy**, and **OpenCV** for plant disease detection to enhance agricultural diagnostics
- Modeled a wheeled sensor-deployment rig in FreeCAD; optimized 3D-printed PLA components for wall thickness, dynamic load-bearing, and minimal support structures.

## Education

### Bachelor of Science in Mechanical Engineering

December 2028

Mississippi State University • Starkville, Mississippi • Sophomore • Cumulative GPA: **3.92/4.0**

- **Colvard Future Leader** Scholarship | **Freshman Academic Excellence** Scholarship | **Presidents List** Summer & Fall 2025

### Cambridge International Advanced Levels

August 2023

St. Xavier's College • Maitighar, Kathmandu

- **Gold** Provincial Information Technology Olympiad | **Silver** National Information Technology Olympiad
- **Bronze** Honor International Youth Math Challenge | **Bronze** Budanilkantha National Math League
- **Bronze** National Science Exhibition

## Technical Skills & Certifications

Certified OnShape Associate, 3D Printing, Free CAD, Fusion 360, ESP32, RaspberryPi, Python, Image Processing and DeepLearning  
PyTorch, Rust, C++, Git(hub), Linux