Bibek Poudel

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Education

New York University Abu Dhabi *Abu Dhabi, UAE*
B.Sc. in Computer Engineering, GPA [3.91/4] *Aug 2022 – May 2026*
Minor in Robotics

- ***NYUAD Engineering Exchange Program (2024–2025):*** *Selected as one of 7 students (out of 120 engineering students) for a one-year exchange program to study at NYU in New York, focusing on advanced coursework and collaborative research in Robotics.*

Relevant Coursework:

- *Robotic Manipulation and Locomotion (ROB-UY 2004), Robot Vision (ROB-UY 3203), Computer Vision (CS-GY 6643), Simulation Tools for Robotics (ROB-UY 4423), Introduction To Haptics and Telerobotics in Medicine (ROB-UY 3404), Introduction to Machine Learning (ECE-UY 4563), Computer-Aided Design (ENGR-UH 3720)*

Research Experience

iCAS Lab, NYUAD *Abu Dhabi, UAE*
Student Research Assistant *Sep 2025 – Present*

- Implemented manipulation pipeline on the **Unitree Z1 Pro** using object-detection and grasp-pose networks (**GGCNN**, **GR-ConvNet**, **AnyGrasp**), improving grasp reliability and enabling autonomous pick-and-place for frontal grasp.
- Working toward implementing perception and manipulation stacks with the **Aliengo** quadruped to enable coordinated whole-body locomotion and manipulation for robust task execution on uneven terrain.
- Aiming to develop learning-from-demonstration and bimanual teleoperation frameworks for the **AgileX Mobile Cobot** to achieve precise long-horizon manipulation tasks in dynamic environments.

Robot Control and Learning Lab, NYUAD *Abu Dhabi, UAE*
Student Research Assistant *Apr 2025 – Sep 2025*

- Trained the **Franka Research 3** arm for dynamic manipulation tasks (e.g. ball throwing) by implementing **Policy Improvement with Path Integrals (PI^2)** algorithm, achieving rapid learning within a few iterations.
- Built a MuJoCo simulation environment for the **FR3** robotic arm and benchmarked **Variable Impedance, admittance, and reinforcement learning-based controllers** to achieve precise and compliant manipulation under varying contact conditions.
- Developed and tested algorithms for **simulation-to-real** robot skill transfer, enabling robust deployment of learned skills on the physical Franka arm.

Flexible AI-enabled Mechatronic Systems Lab (FAMS) *New York, USA*
Research Assistant *Jan 2025 – May 2025*

- Designed and built a **3-DOF robotic arm** with custom **soft robotic fingers** using **SolidWorks** and **silicone molding** to enable safe, adaptive object manipulation, embedding **flex sensors** for deformation sensing and closed-loop grasp control for responsive manipulation.
- Implemented real-time control and actuation pipelines using **Raspberry Pi**, **ROS (Robot Operating System)**, and **Python**, enabling wireless control and execution of basic manipulation tasks.

Cleveland Clinic Abu Dhabi *Abu Dhabi, UAE*
Research Assistant *Jan 2024 – Oct 2024*

- Designed and prototyped a modular **CT scanning phantom** for medical imaging and radiotherapy using **SolidWorks** and **3D printing**, collaborating with clinical radiologists to align design with anatomical and imaging requirements.
- Authored a **quality control manual** standardizing testing and documentation procedures, and explored **certification pathways** and medical device standards to prepare the prototype for clinical accreditation and deployment.

The Vijay Lab *Abu Dhabi, UAE*
Student Research Assistant *Aug 2023 – Aug 2024*

- Developed a **handheld bio-printer** prototype for **tissue engineering** featuring **helical bio-ink extrusion**, adjustable flow rates, ergonomic design, and the capability to extrude **two different bio-inks** for complex, heterogeneous structures.
- Utilized **CAD modeling** and **3D printing** to fabricate structural components and iterate on prototype designs.

Relevant Projects

RL Based Learning for Throwing a Ball with a 7-DOF Robotic Arm: MuJoCo| Reinforcement Learning| Franka Panda | Dynamics | Robot Control | Kinematics Link

Optimal Grasping and Manipulation using Unitree Z1 Pro Robotic Arm: MuJoCo| Robot Vision| Unitree Z1 | Hand-eye Coordination | Camera Calibration| Kinematics Link

Pick and Place using Franka Research 3: MuJoCo| Joint/Cartesian Controllers | Robot Manipulation | Kinematics | Inverse Kinematics Link

Smart Logistic Mobile-Manipulator Robot: Robot Vision | Mobile Manipulator| Navigation| Manipulation| Python| ROS | Computer Vision Link

Haptics Enabled Smart Goggles for Visually Impaired Person: Computer Vision| Yolo V7| Embedded Systems| Raspberry Pi| | Solidworks Link

Autonomous Maze Solving Robot Simulation: Robot Vision| Homography| VPR| Pygame| Navigaation| Optimal Path Planning Link

Skills

Programming Languages:	C, C++, MATLAB, Python
Robotics:	Robot Operating System (ROS), MuJoCo, Robot Kinematics, Path Planning, Isaac Sim, Gazebo, SLAM
Machine Learning:	Neural Networks, Deep Learning, Computer Vision, Data Analysis
Software Packages:	Solidworks, Arduino, KiCad, PyTorch, Scikit-learn, Adobe Creative Suite, LaTeX
Hardware:	Arduino, Esp32, STM32 Microcontrollers, M5stack, Microbit, Laser Cutting, 3D printing, CNC machining, Raspberry Pi, Nvidia Jetson Nano
Languages:	English, Nepali