# Bibek Poudel

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## Professional Summary

I'm a self-motivated AI researcher with proven leadership in robotics and computer-vision R&D, hands-on experience building autonomous systems and edge-AI prototypes, and a track record of mentoring peers through workshops and tech-festival presentations. I'm eager to advance my expertise through graduate research in autonomous driving, deep learning, and generative AI.

## Research Interests

- Deep Learning and Generative AI
- Autonomous Driving and Computer Vision
- Embedded Systems and Robotics

## Education

**London Metropolitan University, Islington College**, BSc(Hons) Computing with Artificial Intelligence — October 2022 – 2025

- **Coursework:** Advance Calculus, Probability  Statistics, Computer Vision, Natural Language Processing, Web Development (Django), Database (Oracle  MySQL), Object Oriented Programming  DSA with Java, Big Data with Apache Hadoop  Spark, Robotics  IoT, Software Engineering

## Experience

**AI Research Associate** — July 2023 – Present
Skill Museum and Research Center (ING Group)
Kathmandu, Nepal

- Lead R&D for robotics and AI prototypes spanning computer vision and NLP domains, including object detection with speech feedback, autonomous vehicle behavior cloning, OCR with text-to-speech, and gesture recognition on embedded platforms.
- Develop and deploy custom AI models on edge devices (Raspberry Pi, Jetson Nano, ESP32) for real-time inference, integrating techniques like model fine-tuning and optimization.
- Conduct research and documentation on machine learning concepts (classical algorithms, LLM fine-tuning, Retrieval-Augmented Generation), reinforcement learning, and IoT hardware, ensuring knowledge sharing within the team.
- Organize and deliver workshops and hackathons on programming and AI fundamentals; present projects at tech festivals, mentoring peers and underclassmen in emerging AI technologies and career development.

**Private Tutor** — January 2022 – December 2023
Self-employed
Kathmandu, Nepal

- Taught STEM subjects of K-12, designing custom lesson plans tailored to individual needs.
- Emphasized practical problem-solving and critical thinking to build a strong academic foundation.
- Improved exam performance through interactive sessions, regular assessments, and personalized feedback.
- Conducted progress reviews with students and parents to track improvement and adapt teaching strategies.

## Licenses and Certifications

**Introduction to TensorFlow for Artificial Intelligence, Machine Learning, and Deep Learning** Mar 2023

Coursera

Credential ID: 2YDKFAF9VTUG

Show credential

## Projects

**Autonomous Navigating Robot with Nvidia Jetson** github.com/lanedetection

- Research and Development of autonomous lane following vehicle with behaviour cloning and integration of models developed in Jetson Orin Nano.
- Tools Used: Jetson Linux, Docker, Python, OpenCV, Git, Anaconda, CUDA Toolkit

**Contextual Object Dectection with YOLOv8 Llama 3.1-Vision**

- Context Generation for real time with fine-tuned YOLOv8 and Llama 3.1-vision. Fine-tuned YOLOv8 with CUDA Toolkit 12.1 and Llama 3.1-Vision with Unsloth and Google Colab.
- Tools Used: Python, Ultralytics, OpenCV, Unsloth, Hugging Face Transformer, PEFT

**Stock Price Prediction using Decision Trees Transformer Models**

- Developed pipeline for stock price prediction using decision tree-based models and later enhanced using transformer architecture.
- Integrated financial indicators such as MACD; performed data cleaning, exploratory analysis, and visualization using Matplotlib/Seaborn.
- Tools Used: Python, Scikit-learn, PyTorch, Transformers, Matplotlib, Pandas, NumPy

**Assisted Vision Goggles for the Visually Impaired**

- Designed a wearable vision-assist system initially on Raspberry Pi 4 with basic object detection, later enhanced with ESP32-CAM for input and laptop-based computation.
- Integrated robust object detection models and custom Nepali currency detection trained on a self-developed dataset; enabled voice feedback via TTS.
- Tools Used: Raspberry Pi, ESP32-CAM, Python, OpenCV, TensorFlow, gTTS, Custom Dataset

**Medium Writer** 2022

- Blogs and articles on various research and application topics related to Deep Learning, Computer Vision and Generative AI.

## Technologies

**Programming Languages:** Python, Core Java & OOP, C++
**Operating Systems:** Linux, Windows
**Microcontrollers & Boards:** Raspberry Pi, Arduino, Jetson Nano, ESP32-CAM
**Libraries & Frameworks:** TensorFlow, PyTorch, OpenCV, Django, Hugging Face Transformers, LangChain, Ultralytics, Mediapipe, Numpy, Pandas, RPI.GPIO, TensorFlow Lite, Servlet & JSP, OCR
**Technologies & Concepts:** Computer Vision, Image Processing, Object Detection, Vision-Language Models, Transformer Architecture, CNN, LSTM, ROS (Robot Operating System), Robotics, Navigation, GPU Training, CUDA Utilization, Basic API Development, HTML
**Tools:** Git & GitHub, Bash Shell, Anaconda & Virtual Environment, Notion, VS Code, Nmap, Jupyter Notebook, Google Colab, BlueJ, Eclipse, Apache NetBeans

## Soft Skills

**Leadership & Collaboration:** Led cross-disciplinary teams in robotics and AI projects, effectively coordinating development and integration tasks.
**Communication:** Presented research findings and technical demonstrations at technology festivals and workshops; authored accessible blog posts on AI topics.

**Problem-Solving:** Tackled complex challenges in autonomous navigation and computer vision projects, demonstrating creativity and adaptability.
**Mentoring & Outreach:** Guided junior students during workshops and hackathons on AI applications and career development.

## References

Available upon request