Bibek Luitel

Hammond, LA — +1 (318) 331-8224 — lbibek2004@gmail.com
github.com/lbibek2004 — luitel-bibek.com.np — linkedin.com/in/bibek-luitel-6a6b96315

Education

Southeastern Louisiana University 2024 – Present
B.S. in Data Science *(in progress)*
Ongoing Relevant Coursework: Machine Learning, Intro to Computer Vision

Experience

Student Ambassador Hammond, LA
College of Science and Technology (CST) — Southeastern Louisiana University

- Serve as the face of CST Southeastern at campus events, representing the college to prospective and current students.
- Manage and organize campus events and tours, coordinating logistics and outreach efforts.
- Recruit new students to the College of Science and Technology through targeted engagement.

Campus Ambassador Hammond, LA
Perplexity Comet — Product Marketing / Outreach

- Supported a campus soft-launch of the Perplexity Comet Browser through face-to-face outreach and flyer-based marketing.
- Drove 46 tracked clicks and 28 successful leads, with ongoing pipeline activity.

Projects

Project A+ — *Cross-Platform AI-Powered Notes Scanning & Study Tool*

- Built a document normalization pipeline in OpenCV — Canny edge detection with contour approximation isolates page boundaries, four-point perspective transform corrects skew, and Sauvola adaptive thresholding binarizes uneven lighting, improving downstream OCR accuracy on handwritten notes.
- Designed a network-aware AI routing system (React Native + NetInfo) that dynamically switches between on-device inference (Gemma 4 via llama.rn/GGML + ML Kit OCR) and cloud APIs (Google Cloud Vision + Gemini 2.5 Pro) based on connectivity, enabling fully offline QA, quiz, and flashcard generation with no network dependency.
- Built a React Native (Expo) app with a Flask REST backend exposing /process, /ask, /generate-quiz, and /generate-flashcards endpoints — bridging the OpenCV pipeline and Gemini/Gemma AI layers into a unified study tool.
- *Tech:* Python, Flask, React-Native w/ Expo, OpenCV, Google Cloud Vision, Ollama, llama.rn, Gemma4:E2B/GeminiAPI.

ECG-Based Biometric Identity Authentication — *Jupyter Notebook*

- Built an ECG-based biometric authentication system using a PyTorch 1D ResNet encoder trained with Triplet Loss on 293,039 heartbeat samples from PTB-XL (21,500+ records), achieving AUC 0.9720 and EER 9.33%, competitive with published literature.
- Designed a SciPy signal preprocessing pipeline with zero-phase Butterworth bandpass filtering (0.5–40Hz) and Z-score normalization to remove baseline wander and high-frequency noise while preserving identity-bearing ECG morphology.
- Trained with mixed precision on dual NVIDIA T4 GPUs (Kaggle), producing 128-dim L2-normalized embeddings; evaluated with ROC curves, EER, FAR/FRR, and t-SNE visualization; implemented enrollment and authentication inference with accept/reject at threshold 0.640.
- *Tech:* Tech: Python, PyTorch, SciPy, scikit-learn, Kaggle (T4 GPUs).

Analysis of Fatal Flight Crashes from 2019–2025 — *Python CLI*

- Developed a modular CLI to analyze aviation crash datasets by crash type, fatalities, and location, with an automated ETL pipeline: load raw CSVs, preprocess and statistically summarize, then export to pickled DataFrames and CSV reports.
- Implemented visualization modules producing box plots, histograms, and correlation charts; added utilities for conditional probability workflows and vector math.
- *Tech:* Python, Pandas, Matplotlib.

Technical Skills

Languages: Python, TypeScript, JavaScript, Java, C#, C++
Web / Frameworks: React, React Native (Expo), ASP.NET, Flask
Data & ML: Pandas, NumPy, Matplotlib, Scikit-Learn, TensorFlow, Scikit-Image, OpenCV, PyTorch, SQL, MySQL
AI / Inference: Google Cloud Vision API, Gemini 2.5 Pro, Gemma 4 (GGML / llama.rn), ML Kit
Tools: Git, Anaconda, Google Colab, Microsoft Office Suite
Foundations: HTML, CSS

Additional

Strengths: Leadership, collaboration, ownership, consistency, and clear communication.