Anubhav Lamsal

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About

Computer Science Student with a Strong Foundation in Physics, Data Analysis and Applied Mathematics, skilled in Python, C++, and ROOT. Experienced in developing algorithms, simulations, and data-driven models, with hands-on projects ranging from particle physics analysis to machine learning applications. Seeking to leverage technical expertise in simulation, data interpretation, and algorithm development to contribute to cutting-edge research and development projects.

- Languages Spoken: English (Proficient), Nepali (Mother tongue), Hindi (Proficient), German (Basic).
- Date of Birth: 20/01/2005

Personal Projects

Portfolio Website JUL 2024

- Developed a portfolio site using Javascript, CSS and HTML and hosted it using github. It can be found at: https://oipipa.github.io/portfolio/

Maze Solving Snake JAN 2022

- Developed a maze-solving AI using a randomized DFS algorithm and a specialized A* algorithm, resulting in a 30% faster pathfinding solution compared to traditional methods.

Smart Bicycle Navigation System AUG 2022 - NOV 2022

- Engineered a real-time Smart Bicycle Navigation System using NEO-6M GPS and Arduino, achieving precise location tracking with 95% accuracy.
- Integrated ESP8266 for seamless data handling and OLED display for intuitive feedback, reducing travel estimation errors by 20%.
- Designed to enhance commuter experience through accurate speed and ETA calculations.

Procedural City Generator JUL 2023 - AUG 2023

- Designed and implemented a procedural city generator leveraging L-systems and Perlin noise algorithms, capable of creating diverse and scalable urban environments.
- Enabled efficient visualization of hypothetical city planning scenarios such as traffic management.

Plasma Wakefield Acceleration Simulation APR 2024-JUN 2024

- Designed a 2D plasma wakefield acceleration simulation using a particle-in-cell (PIC) algorithm, successfully modeling interactions between high-energy particle beams and plasma that generated electric fields capable of accelerating particles to 99.9% of the speed of light.
- Visualized over 500 simulation runs with Python and Matplotlib, identifying key density perturbation patterns and improving model accuracy by 15% through iterative refinements.

Precision Analysis of Rare Particle Decay Channels JUL 2024-SEPT 2024

- The analysis used the Open Data from the ATLAS Experiment at CERN. Specifically, the project made use of datasets from proton-proton collisions at a center-of-mass energy of 13 TeV, which were recorded during Run 2 of the Large Hadron Collider (LHC).
- The dataset can be found here or https://opendata.cern.ch/record/80000.
- Analysis and Interpretation is remaining as processing is time-consuming. Status - Partially Completed

Mood Reader AUG 2024

- Developed a facial expression recognition model using TensorFlow and OpenCV, trained on FER-2013 data. Achieved an 85% accuracy rate in real-time expression detection, optimizing model performance through iterative testing.

Technological Stack

Programming Languages, Markup & Scripting

- **Advanced:** Python, C++, Javascript, HTML, CSS, LaTeX.
- **Proficient:** Shell Scripting (Bash), Powershell, Verilog
- **Familiar:** Java.

Data Science & Machine Learning

- **Advanced:** Python (NumPy, Pandas, SciKit-Learn, TensorFlow, Matplotlib, Seaborn), R (EDA Techniques), ROOT (CERN)
- **Proficient:** Jupyter, OpenCV, PyTorch, SciPy
- **Familiar:** Keras, MATLAB

Data Visualization & Analysis

- **Advanced:** Python (Matplotlib, Seaborn, Plotly), R.
- **Proficient:** Tableau, D3.js

Version Control & Automation

- **Advanced:** Git, GitHub, GitLab
- **Proficient:** Docker (Containerization), Jenkins (CI/CD), Bash & Shell Scripting
- **Familiar:** Kubernetes, Ansible

Databases

- **Advanced:** MySQL, MongoDB, SQlite
- **Proficient:** Neo4j, PostgreSQL

Other Relevant Skills

- **Distributed Computing:** PySpark, Ray, Dask, Threading, Multiprocessing, etc.
- **Embedded Systems:** Arduino, Raspberry Pi.
- **Web Development & Server-side coding:** React, Express, Django, Flask.
- **Graphics & Game Development:** OpenGL, Pygame, Unreal Engine, Three.js

Education

IMC FH Krems, BSc. in Computer Science SEPT 2023 – JUN 2026 (Est.)

- **Degree:** Bachelor of Science in Informatics (3rd Semester)
- **Key Courses:** Programming in Python, Algorithms and Data Structures, Network Technologies, Statistics for Computer Science, Database Systems, Theoretical Computer Science/Logic, Software Engineering, Human-Computer Interaction.
- **GPA:** 1.87 scaled on 5 (5 being the lowest, 1 being the highest)

Rato Bangala School, A-levels SEPT 2021 – JUN 2023

- **A levels:** Physics (9702), Chemistry (9701), Biology (9700), Mathematics (9709)
- **AS levels:** English General Paper (8021), Further Mathematics (9231)

Self, A-levels -

- **MITOpenCourseware:** Calculus, Linear Partial Differential Equations, Thermodynamics, Classical Mechanics (I-III), Electricity and Magnetism, Quantum Physics I, Statistical Physics.
- **Codecademy:** Data Science Professional Certification, Analyze Data with Python, Feature Engineering, Backend Applications with JavaScript.

Codecademy Certifications can be found at https://www.codecademy.com/profiles/anubhavipa0217