Darwin Paudel

GPU computing · Machine learning · Full-stack engineering

Kathmandu, Nepal · +977-9847621442 · darwinpaudel@gmail.com · github.com/winzepz · darwin.com.np

PROFILE

Computer science developer from Kathmandu working where performance and trust both matter. I wrote an FP32 matrix multiply in CUDA that reaches **2,435 GFLOP/s (76% of FP32 peak)** on a laptop GTX 1650 and beats cuBLAS at large sizes, trained CNN and LSTM models with evaluation that goes past accuracy, and built KYC- and payment-backed platforms for people in Nepal.

EDUCATION

BSc (Hons) Computer Science, University of Wolverhampton, UK — Feb 2023 – Jul 2026
Herald College Kathmandu, Naxal
Relevant modules: High Performance Computing, Artificial Intelligence and Machine Learning, Concepts and Technologies of AI, Big Data, Embedded Systems Programming, Distributed and Cloud Systems Programming, Collaborative Development, Human-Computer Interaction

NEB +2 (Grade XII), Science with Computer Science — 2020 – 2022 (2079 BS)
Kathmandu Model Secondary School, Bagbazar, Kathmandu

PROJECTS

turing-sgemm · CUDA SGEMM from scratch

- Seven kernels from naive to double-buffered, plus an autotuned tile shape: 23 → **2,435 GFLOP/s** at n = 4096 on a GTX 1650 (Turing, sm_75), 104× over naive.
- Faster than cuBLAS 12.9 at n = 3072 and 4096 (2,435 vs 1,563 GFLOP/s); showed cuBLAS throughput is non-monotonic in n and ruled out stride aliasing with leading-dimension padding.
- Autotuner compiles all 488 legal tile configs at runtime with NVRTC (+30% at n = 4096); 108 pytest correctness tests against an fp64 reference; roofline and 181 GB/s bandwidth measurements.

`CUDA C++ · NVRTC · CuPy · Python · pytest`

DonateOn · Final-year project, 40 credits — 2025 – 2026

- Trust-first crowdfunding platform for Nepal: KYC for campaign owners, admin review of KYC, campaigns and payouts, named or anonymous donations and PDF donation statements.
- eSewa payments signed with HMAC-SHA256 and verified on callback; Khalti payments verified server-side. Express API with Zod validation, rate limiting, bcrypt and JWT.
- Ran the project end to end, from literature review and user survey through SRS, design and test plan to build, and defended it in a viva.

`React · TypeScript · Express · PostgreSQL · Cloudinary · eSewa · Khalti`

UddharSetu · Disaster-relief coordination — 2026

- Connects KYC-verified social workers with donors and volunteers; admins review every person and post before it goes public.
- Google ID tokens verified server-side with HTTP-only session cookies, Khalti payments verified before crediting, transactional material pledges, signed Cloudinary uploads and nearest-first Leaflet maps.

`React 19 · TypeScript · Express 5 · PostgreSQL · Leaflet`

Public Service Hub Nepal · Civic tech — 2026

- 18 step-by-step guides to Nepal government services in English and Nepali, with search across English, Nepali and romanised Nepali, a printable checklist generator and a three.js map of 77 districts. WCAG 2.2 AA, no tracking.

`Next.js 14 · TypeScript · three.js · static export`

Facial Expression Classification

- Baseline CNN vs regularised CNN vs EfficientNetB0 on 35,838 faces; **68.2%** val. accuracy with a quarter of the baseline's parameters.

`TensorFlow / Keras · EfficientNetB0`

Paper-Talk API

- News, authors and admins: session-backed three-step registration, JWT auth and an article approval workflow.

`Node.js · Express · MongoDB · Joi`

Hate Speech Detection

- SimpleRNN, BiLSTM and GloVe on 24,783 tweets; **87.4%** test accuracy, macro F1 analysis, Gradio demo.

`TensorFlow / Keras · NLTK · Gradio`

QuickDrop LAN

- Real-time text and code sharing over a local network with syntax highlighting.

`Node.js · Express · Socket.IO`

TECHNICAL SKILLS

GPU & parallel	CUDA, NVRTC / CuPy, OpenMP, Pthreads, MPI, mutexes, semaphores and barriers, roofline analysis
Machine learning	Regression, classification, trees and random forests, k-means, PCA, CNNs (ResNet, VGG16, EfficientNet), transfer learning, autoencoders, RNN / LSTM / GRU, attention, transformers
NLP & AI	TF-IDF, Word2Vec, GloVe, seq2seq, A*, BFS / DFS, genetic algorithms, Bayesian inference
Languages	Python, C, C++, Java, JavaScript, TypeScript, PHP, SQL, Linux shell
Data & big data	NumPy, pandas, scikit-learn, Matplotlib, Jupyter, Spark (PySpark, Spark SQL), Hadoop (HDFS, MapReduce), MongoDB, Elasticsearch
Web & backend	React, Next.js, Node.js, Express, REST, microservices, PostgreSQL, MySQL, Prisma, Socket.IO, JWT, OAuth, three.js
Cloud & security	Azure (VMs, Functions), AWS S3, Google Cloud Firestore, SSL / HTTPS, CIA triad, firewalls, VPNs, intrusion detection
Engineering	OOP and SOLID, UML, Java (JDBC, RMI), black-box and white-box testing, CI/CD, usability testing, WCAG, Figma, Scrum, Kanban, Git, Jira, Postman
Embedded & maths	Arduino UNO, C++, interrupts, state machines · linear algebra, calculus, probability and statistics, numerical methods

AWARDS AND EVENTS

International Youth Math Challenge Oct 2020
Qualification round certificate; qualified for the pre-final round. ID QR-2020-E92EB727106

THREAT CON 2022 Sep 2022
Cybersecurity conference attendee, organised by ThreatNix, Kathmandu

INTERESTS AND LANGUAGES

Machine learning and deep learning · AI on edge and embedded devices · High-performance and GPU computing · Secure cloud systems

Nepali, first language · English, advanced (C1)