Sanket Sharma

Software Engineer | Machine Learning & AI Safety

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WORK EXPERIENCE

Software Developer Intern

Aug 2024 – Dec 2024
Kathmandu

RealHRsoft

- Design and create the RealHRsoft website.
- Create video tutorials for the software.
- Help clients solve problems related to software

EDUCATION

Bachelors in Computer Science

Jun 2023 – May 2026
Kathmandu

Coventry University

PROJECT

NBA Shot Prediction API

shot.basketballtactics.live

- Built a machine learning API using FastAPI that predicts NBA shot outcomes using 4 models — Logistic Regression, Decision Tree, XGBoost, and Histogram Gradient Boosting
- Trained and compared multiple ML models with scikit-learn and XGBoost, applying feature scaling with StandardScaler and dimensionality reduction with PCA
- Developed a REST API with a /predict endpoint that returns shot make/miss probabilities from all 4 models simultaneously
- Containerized the application using Docker and pushed the image to Amazon ECR (Elastic Container Registry)
- Deployed the application on AWS EC2 (t3.micro) using Docker, making it publicly accessible over the internet
- Built a static frontend served directly from FastAPI using HTML/CSS/JS mounted as static files
- Managed cloud infrastructure entirely via AWS CLI including EC2, ECR, IAM roles, VPC, and security groups
- Implemented a CI/CD ready workflow with Docker image versioning on ECR for easy redeployment

FormFlow

formflow.sanketkoprofile.tech

- Built a full-stack SaaS form-builder platform with Next.js 16, React 19, and TypeScript on the frontend and an Express 5 / TypeScript REST API spanning 8 feature domains (authentication, organizations/teams, forms, submissions, sharing, notifications, and billing), backed by MongoDB and Redis.
- Implemented secure JWT authentication with access/refresh token rotation via httpOnly cookies, bcrypt password hashing, email OTP verification (Nodemailer), and end-to-end request validation using Zod schemas.
- Containerized the entire stack with Docker and orchestrated it via Docker Compose (app services, MongoDB, Redis, and an Nginx reverse proxy), unifying frontend and API under a single origin to eliminate CORS and simplify cookie-based auth.

- Designed and shipped a complete CI/CD pipeline with GitHub Actions, automated type-checking and builds on every PR, Docker image builds published to GHCR, and zero-touch deploys to AWS EC2 over SSH on merges to main.
- Provisioned and hardened the production environment on AWS EC2 (security-group lockdown, persistent Docker volumes, service health checks, and environment-driven config), producing reproducible, self-healing deployments.

Basketball Action Simulator

basketballtactics.live

- Built an end-to-end ML pipeline processing 632 NBA games of 25Hz player-tracking data (SportVU), from raw JSON through feature engineering to a deployed REST API, spanning 13 distinct pipeline stages.
- Diagnosed a data-segmentation bug causing 92% of one strategy cluster to consist of fragmented possessions; implemented a corrective filter that improved usable training data from 92,438 to 71,793 verified possessions.
- Designed an LSTM autoencoder compressing 400-step player-tracking sequences into 32-dimensional embeddings, clustered via K-means into 6 offensive strategy archetypes for downstream classification and generation tasks.
- Trained an XGBoost shot-quality model (11 engineered spatial/defensive features) serving as the system's expected-value function, and a situation classifier reaching 99.7% cross-validation accuracy.
- Diagnosed and resolved 8 sequential failure modes in a movement-generation model, including gradient masking, identity tracking via Hungarian assignment, and mode-collapse, converging on a Mixture Density Network that samples committed, multi-modal player trajectories.
- Engineered a two-team simulation layer combining 6 strategy-specific movement models with a defensive-response model blending learned behavior with explicit man-to-man tracking and 4 configurable defensive schemes.
- Designed an expected-value action-planning layer enumerating shoot/dribble/pass decisions at each simulation step, replacing pure imitation learning with explicit, auditable decision logic.
- Shipped a FastAPI backend and interactive frontend exposing the full simulation pipeline, letting users configure court positions and receive animated play recommendations.
- Built a synthetic verification suite to validate each architectural fix independently (e.g., quantifying pass-completion rates to open teammates) before applying it to real training data.
- Deployed it using DOCKER, and AWS EC2.

CERTIFICATIONS

Probability and Statistics

2026

Institue Of Analytics

Machine Learning in Python

2026

Institue Of Analytics

Deep Learning in Python

2026

Institue Of Analytics

DevOps

2026

BROADWAY INFOSYS

Python Introduction 2025
Institue Of Analytics

Data Analysis and Visualisation 2025
Institue Of Analytics

Data Cleaning 2025
Institue Of Analytics

The Command Line 2025
Institue Of Analytics

Working with Data Sources Using SQL 2025
Institue Of Analytics

APIs and Web Scraping in Python 2025
Institue Of Analytics

SKILLS

Computer Language: HTML, CSS, JavaScript, Bash Scripting, Python (Advanced),
Databases (MySQL MongoDB) (Intermediate), **Linux / Git / Docker** (Intermediate),
Comfortable working with MS Office, MS Word, MS Excel, Powerpoint (Advanced),
Numpy, Pandas, Matplotlib, Seaborn (Intermediate), **R programming for Data Analysis** (Intermediate),
ReactJs,Nextjs (Advanced), **ML/DL: TensorFlow, scikit-learn** (Intermediate)

LANGUAGES

Nepali — Full Professional Proficiency
English — Full Professional Proficiency