# Ansh Singhal

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## SUMMARY

AI/ML Engineer building high-performance, end-to-end machine learning systems through robust systems design, efficient architecture, scalable deployment pipelines, and backend integration.

## SKILLS

- **Programming Languages**: Python, Java, C++, SQL
- **Machine Learning & AI**: PyTorch, TensorFlow, Hugging Face Transformers, LangChain, LlamaIndex
- **Backend & Web Frameworks**: Spring Boot, Flask, FastAPI, Django, REST APIs, gRPC, Bootstrap
- **DevOps & MLOps Tools**: Docker, Kubernetes, Redis, Kafka, Celery, Git, Prometheus, Grafana, CI/CD
- **Cloud Platforms**: Google Cloud Platform (GCP), Microsoft Azure, Amazon Web Services (AWS)
- **Systems Design**: API Design, Observability, Scalable Microservices, Distributed Systems

## EXPERIENCE

- **Open Source Contributor – IntelOwl** — Remote
  *Threat Intelligence Platform* — *Jan 2025 – May 2025*
  - **Threat Analyzer Development**: Built modular file-based and observable-event analyzers to extract actionable threat intelligence from files, URLs, and system behaviors.
  - **Containerization & APIs**: Containerized analyzers using **Docker** and exposed them via **FastAPI** for reproducible, scalable, and isolated runtime execution.
  - **Django Backend**: Developed and maintained the **Django** backend to expose RESTful endpoints for OSINT enrichment, enabling seamless integration.
  - **Documentation & Dev Onboarding**: Authored detailed documentation and test suites to streamline contributor onboarding and increase adoption in the open-source community.

## PROJECTS

- **Agentic RAG – Legal Research Engine**: Built an **Agentic RAG pipeline** for domain-specific legal retrieval with **97% accuracy** and **P95 latency ¡ 500ms**. Designed multi-agent routing via LangGraph and hybrid retrieval using Pinecone (dense + sparse).
  **Highlights:** 2-stage reranking (BGE + MiniLM), LegalSeg-based NLP, and containerized FastAPI microservices deployed on **AWS ECS**.
  **Tech:** Python, FastAPI, LangGraph, Pinecone, Docker, AWS ECS
- **Flood-GAN – Physics-Aware Flood Mapping using Multi-Channel Conditional GANs**: Designed a **physics-informed cGAN** for **SAR→Optical translation** with flood detection. Achieved **PSNR 31.25**, **SSIM 0.94**, and **L1 0.05**. Model outputs RGB + Water maps with hydrology-consistent supervision.
  **Highlights:** NDWI-consistent RGB generation, cloud-masked losses, dual-head U-Net, PatchGAN discriminator, and speckle preservation loss.
  **Tech:** PyTorch, Lightning, Sentinel-1/2, VGG19, EMA, TTUR
- **Talent Insider – Job Platform**: Developed a scalable recruitment system supporting **1K+ users** with secure bcrypt-based authentication and live CRUD job management. Engineered RESTful APIs and optimized DB operations for sub-100ms queries.
  **Highlights:** Modular MVC structure, asynchronous API calls, and relational data consistency using MySQL transactions.
  **Tech:** Java, Spring Boot, JDBC, MySQL, Maven, Java Swing

## EDUCATION

- **Bennett University** — Uttar Pradesh, India
  *B.Tech in Computer Science (AI Specialization); CGPA: 9.65* — *2023 – 2027*

## HONORS AND AWARDS

- 6th Rank, Smart India Hackathon – National Inter-College Level
- 1st Rank, International English Olympiad & International Science Olympiad
- Winner, State-Level Debate Championship
- Winner, National Science Exhibition

## VOLUNTEER EXPERIENCE

- **Youth Advisory Council - Rotary International (USA)** — Remote
  *Board Member (Only member from Asia selected)* — *Jul 2023 – Jun 2024*
  - Collaborated with a team of leaders to shape the future of Rotary's youth exchange programs while maintaining strong communication and collaboration with other members and staff.
  - Selected as the only member from Asia based on proven leadership in Rotary and its programs, contributing valuable experience and knowledge to guide future youth exchange initiatives.