ARNAB BHOWAL

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EDUCATION

New York University (Fall 2024 student)   **Brooklyn, NY**
Master of Science in Computer Engineering   **September 2024 - July 2026**
Key Coursework: Machine Learning, MLOps, Internet Architecture & Protocol, Real-time embedded system

New Horizon College of Engineering | CGPA: 9.46/10   **Bengaluru, India**
Bachelor of Engineering in Information Science & Engineering   **August 2016 - August 2020**
Key Coursework: Object-Oriented Programming, DBMS, Python, Data Analytics, Engineering Mathematics

SKILLS

Languages:	C++, Python, Java, SQL, JavaScript
Databases:	MySQL, MongoDB, REST API
Cloud /DevOps:	Container Orchestration (Kubernetes, Argo Workflows, ArgoCD), Docker, Cloud Platforms (Chameleon Cloud, AWS, Azure), Monitoring & Observability (Prometheus, Grafana)
Networking:	UDP Hole Punching, Real-time Systems, P2P Architecture, Internet Protocols (TCP/IP), Routing Protocols, Client-Server Communication, Concurrency,Multithreading
AI/ML:	Generative AI, Computer Vision (YOLO V3, CNN), Large Language Models (LLMs), Numpy, Retrieval-Augmented Generation (RAG), Vector Databases (FAISS), Triplet Loss, Pandas

EXPERIENCE

Capgemini   **Bengaluru, India**
Professional-I, Software Engineer   **September 2020 - July 2024**
- Led product lifecycle management and customized ENOVIA PLM software for Stellantis.
- Emphasized front-end & back-end customization, and system integration spanning 4+ teams.
- Improved engineering data management across 14 automotive brands, thereby boosting production and sales.
- Facilitated 10+ knowledge sharing sessions, engaging 30+ members & increasing team collaboration by 30%.
- Engineered automated data pipelines using Cron jobs for daily batch transfers, ensuring reliable and high-volume data exchange between Stellantis & ATOS systems, handling millions of data daily.

SmallBzr - Startup   **Bengaluru, India**
Full-Stack Web Developer Intern   **February 2020 - July 2020**
- Designed the front-end of the website for the WisTuition platform, connecting 50+ tutors with students nearby.
- Introduced features to enhance tutor-student matching and communication by 40% based on locality.
- Optimized back-end performance using MySQL to efficiently manage and serve data for over 1000+ users.
- Managed site deployment and ensured 99.9% uptime, demonstrating experience in maintaining system reliability and performance.

PROJECTS

Peer-to-Peer Messaging Application
Github - https://github.com/arnabbhowal/p2p-chat-udp
Tech Stack: Java, UDP hole punching, Swing UI
- Engineered a secure peer-to-peer (P2P) chat and file transfer application in Java, utilizing UDP for low-latency communication and implementing UDP hole punching for direct connectivity, a custom ECDH key exchange protocol for end-to-end encryption, and a central discovery server for peer coordination over the internet.

Pickle – AI-Powered Decision Assistant
Winner – HackNYU 2025: Best Use of Gen-AI (International Hackathon with 650+ participants & 155+ teams)
Devpost Submission - Pickle on devpost: https://devpost.com/software/pickle-frgobu
Tech Stack: Flutter, Flask (Python), DeepSeek, Perplexity, OpenPerplex, Gemini
- Developed Pickle, an AI-powered assistant with a Flutter-based UI and Flask backend, leveraging LLMs to provide personalized recommendations for movies, food, travel, and task prioritization.

Drone-Assisted Effective Pesticide Sprayer
Tech Stack: Python, YOLO V3, Computer Vision, Convolutional Neural Network (CNN), LabelImg
International Research Paper Published: IJSR CSEIT - https://ijsrcseit.com/paper/CSEIT206381.pdf
● Built a ML-driven object detection model using YOLO V3 and CNN to automate pesticide application, addressing the challenge of real-time image processing and decision-making on an integrated system.

LegalAI: NLP-based Case Law Identification and Summarization Assistant (MLOps)
Tech Stack: Python, Legal-BERT, FastAPI, Prometheus, Grafana, Llama 3, FAISS, Argo Workflows, ArgoCD, Terraform, Ansible, Chameleon Cloud.
● Trained and fine-tuned a Legal-BERT model to identify semantic similarity in legal documents using a triplet loss strategy, and developed a Retrieval-Augmented Generation (RAG) system for efficient case law summarization and retrieval.

Embedded Sentry - Gesture-Based Unlocking System
Tech Stack: C, Embedded Systems, STM32, I3G4250D Gyroscope, Firmware.
● Engineered a gesture-based unlocking system on an STM32F429I-DISCO board, writing real-time C firmware to process data from an integrated I3G4250D gyroscope. Implemented gesture recognition algorithms to compare user movements for secure, threshold-based authentication.

Cab Booking Application
Tech Stack: Java, Spring Boot, MySQL, Angular, HTML5, CSS, Postman, Swagger
● Implemented a Cab Booking Application website with user features for booking, profile management, and ride history, along with admin tools to manage cabs, drivers, and details securely, using responsive design for improved user experience.

LEADERSHIP
● Earned award of honor for spearheading and coordinating QuBytes 2k19, a state-level intercollegiate tech fest with over 1,000 participants from 20+ colleges, to showcase their talents across 15+ events.

ACHIEVEMENTS
● Winner of HackNYU 2025 for best use of Gen-AI - largest student organized hackathon in NYC.
● Achieved 1st position out of 150 competitors in the CodeLingus coding contest hosted by the ISE department.
● Secured 2nd place among 200 participants in Enigma Cybersecurity Challenge organized by i-CSEH club.