Kushagra Agrawal

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Results-driven Data Science and AI enthusiast with a proven track record in developing innovative solutions for predictive analytics, NLP, and deep learning applications. Adept at leveraging advanced machine learning frameworks and cloud technologies to drive data-driven decision-making and operational efficiency.

Areas of Interest: AI | Neural Networks | NLP | Computer Vision | Biomedical Engineering | Robotics | Transformers | Edge AI

EDUCATION

KIIT Deemed University, *B.Tech. in Computer Science Engineering* | India | GPA (6 Sem) : 9.60 / 10   May 2026

Conferences: PReMI - 2025 | ICEdge 2025 | ICDCIT 2024, 2025, 2026 | HiPC - 2025 | ACM Compute - 2025
Courses: Data Structures & Algorithms | Database Management | Software Engg | Computer Networks | ML | AI | SQL

EXPERIENCE

Taipei Medical University & National Tsing Hua University *Research Intern* | On-Site (Taiwan)   July 2025 - August 2025

- Jointly Supervised by Dr. Yen Lin Sung (TMU) & Dr. Ting Wei Wang (NTHU)
- Developing cutting-edge AI solutions for biomedical applications to advance healthcare innovation
- Being Instrumental in development of Battery Free Pacemaker for Human Heart
- Contributing to research on prosthetic arm movements using Electromyography (EMG) Signals

MIDAS Lab, IIIT Delhi, *Research Intern* |Remote (Delhi, India)   May 2025 - July 2025

- Developed the Faulty Patch Agent for hotspot detection and bug-prone code region identification through git history analysis.
- Integrated six specialized agents into a cohesive multi-agent Python framework for automated GitHub repository analysis and LLM-powered patch generation.

Defence Research & Development Organization - DYSL-AI, *Research Intern* | On-Site (Bengaluru India)   May 2025 - June 2025

- Designed, implemented, and optimized Large Language Model-based tools for defense applications under a confidential project for Indian Military Services

Indian Statistical Institute, *Data Science Intern* | Remote (Kolkata India)   Jul 2024 - Oct 2024

- Developed a Predictive Maintenance Analytics model using Python, implementing Random Forest Classifiers and multi-output strategies to accurately forecast equipment failures, improving prediction accuracy upto **98%**.
- Underwent training sessions on Python programming and advanced analytics methodologies while producing a comprehensive project report, showcasing insights derived from **120+ hours** of rigorous data analysis and coding efforts under expert guidance.

IEEE Silchar Subsection, *Research Intern* | Remote (Silchar, India)   Jul 2024 - Aug 2024

- Spearheaded deep learning-based experimentation for CMOS rectifier design, driving innovation under the mentorship of Dr. Taimoor Khan and uncovering actionable insights to propel future advancements in semiconductor technology.

SKILLS

Languages	Python , C, Java, CUDA, Matlab, Git, Bash, LaTeX, HTML, CSS, JS
Cloud Platforms	Google Cloud Platform, Amazon AWS, Oracle Cloud, Microsoft Azure, IBM Cloud
Software	Linux, Office Suite, PowerBI, Excel, Tableau, Matlab, Verilog, Docker
Machine Learning Frameworks	TensorFlow, Keras, Pandas, Scikit-learn, Transformers, BERT, Tokenization & Preprocessing
Soft Skills	Effective Communication, Leadership, Presentation Skills, Problem Solving, Team Building
Linguistics	English (Proficient), Hindi (Native), Gujarati (Professional), German (Intermediate)

SUMMER SCHOOL / TRAINING / WORKSHOPS / CERTIFICATIONS

CVIT SUMMER SCHOOL ON AI 2024   July 2024
Centre for Visual Information Technology (CVIT), International Institute of Information Technology

Machine Learning for Biomedical Signal Processing   June 2024
ABV-Indian Institute of Information Technology and Management

Machine Learning for Communication & Networking   July 2024
ABV-Indian Institute of Information Technology and Management

Two-week Workshop On Quantum Computing: Circuits, Algorithms, and Machine Learning (QuCAM)   December 2024
National Institute of Technology - Rourkela

Oracle OCI AI Foundations Certification   July 2025
Oracle Inc.

Oracle OCI Generative AI Certification   July 2024
Oracle Inc.

PROJECTS

Personalized AI Nutrition Chatbot   Oct 2024 - Dec 2024
- Developed a personalized healthcare chatbot to address healthcare access inequality. Designed a conversational AI that integrates US state-level Gini Index and per capita income data for categorizing economic status (Weak, Medium, Strong) using K-Means clustering, achieving an accuracy of 92%. Leveraged a nutrition dataset with 100+ food items to generate tailored nutritional advice, ensuring accessibility for economically disadvantaged groups.

Predictive Maintenance Analytics   Jul 2024 - Oct 2024
- Designed and implemented a **Random Forest-based machine learning model** leveraging the **AI4I Predictive Maintenance Dataset** to accurately predict and explain machine failures, enhancing fault detection capabilities with interpretable insights

Fine Tuning LLMs on CPU – *Intel Unnati Industrial Training Program*   Apr 2024 - Aug 2024
- Fine-tuned a **Large Language Model (LLM)** for a **story generation chatbot** using **Intel OneAPI toolkits** , optimizing performance for CPU-based deployment and enabling efficient natural language generation on resource-constrained systems.

Medicinal Leaf Detection Model - *Smart India Hackathon 2023*   May 2023 - Sept 2023
- Engineered a **Convolutional Neural Network (CNN)** model for accurate medicinal leaf detection, leveraging advanced image processing techniques to classify and identify plant species with high precision.

RESEARCH

- Quantitative Evaluation of Hazard Mitigation Strategies in a 5-Stage RISC-V Pipeline: A Benchmark-Driven Analysis Using Fibonacci and Prime Sieve (Accepted at RISC-V HPC - HiPC 2025

- Trust-Aware Game-Theoretic Allocation for Secure and Efficient IoT-Edge Systems (Accepted, ICEdge 2025 - IISC Bangalore)

- Neural Orchestration for Multi-Agent Systems: A Deep Learning Framework for Optimal Agent Selection in Multi-Domain Task Environments (Accepted, PReMI 2025 - IIT Delhi)

- Artificial intelligence in personalized nutrition and food manufacturing: a comprehensive review of methods, applications, and future directions | Frontiers in Nutrition | **IF: 5.1**

- AI-Driven Transformation in Food Manufacturing: A Pathway to Sustainable Efficiency and Quality Assurance | Frontiers in Nutrition | **IF: 5.1**

- How Large Language Models Transform Urban Planning and Shape Tomorrow's Cities? | Springer - Applied Machine Learning Series (Book Chapter)

- AI-ML Applications in Agriculture and Food Processing | Springer - SDG Series (Book Chapter)

- IoT-Based Service Allocation in Edge Computing Using Game Theory | Springer - LNCS

- Deep Learning in Industry 4.0: Transforming Manufacturing Through Data-Driven Innovation | Springer - LNCS

- Artificial Intelligence Innovations: Inception of new horizons in food processing sector | IEEE Xplore

- Authored **30+ articles** published in national and international magazines, showcasing cross-disciplinary research approach

- Authored **10+ book chapters** in renowned publisher volumes, including **Springer, Elsevier, Bentham Science, Wiley, and IEEE**, currently accepted and in the publishing pipeline

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Methodological Framework for Equity-Focused Nutrition Recommendation System
Indian Patent (Published)   App No : 202531001573 A
- Developed and published a patent for a revolutionary nutrition guidance platform reaching underserved communities; created affordable, personalized solutions for a **75M+** market while promoting health equity