

Tushar Gwal

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EDUCATION

Illinois Institute of Technology

Master of Science in Computer Science

Chicago, IL

Aug 2023 – May 2025

Dr. A. P. J. Abdul Kalam Technical University

Bachelor of Technology in Computer Science and Engineering

Lucknow, India

Aug 2014 – May 2018

SKILLS

Languages: Python, Java, SQL

Frameworks: FastAPI, Spring Boot, LangChain, LangGraph

AI/ML: LLMs, RAG, PyTorch, TensorFlow, Scikitlearn, NumPy, Pandas, OpenCV

Databases: PostgreSQL, MySQL, Pinecone(vector DB)

Cloud/DevOps: AWS, Azure, Docker, CI/CD, Git

Domains: AI, Machine Learning, Deep Learning, MLOps, Computer Vision, Healthcare, NLP

EXPERIENCE

AI Engineer Intern

Sep 2025 – Present

Product Manager Accelerator, Tallahassee, FL

- Served as a founding AI engineer in a startup accelerator environment, tasked with building an AI Coach application, a career coaching tool powered by Generative AI (LLMs, LangChain, Pinecone, FastAPI) designed to guide users through career planning, skill recommendations, and personalized coaching.
- Built the entire backend recommendation engine by fetching user career profiles from the database and integrated O*NET, BLS, and Adzuna APIs to gather occupation data, wages, and skill trends to generate personalized career path suggestions.
- Led full-stack development, integrating LLM APIs (OpenAI GPT-4o) into the FastAPI backend and connecting PostgreSQL & Pinecone vector DB with a React/Vercel frontend to deliver seamless, scalable user experiences.
- Collaborated with product managers, designers, and data scientists in an agile environment, contributing research on state-of-the-art GenAI techniques and delivering demos that influenced roadmap decisions and product feature prioritization.

AI Researcher - Model Validation Expert (MOVE) Fellow

Aug 2025 – Present

Handshake AI, San Francisco, CA

- Designed reasoning-heavy prompts (TOTs) to test text-only tasks, crafting unambiguous challenges that exposed major reasoning failures in LLMs.
- Created multimodal prompts (MIITs) requiring models to analyze both images and text, successfully inducing failures in visual interpretation or logical reasoning.
- Promoted to an ML-focused project, analyzing agentic AI plans and code to ensure scientific integrity, verifying that generated outputs matched intended design and reasoning steps.

Research Assistant - Deep Learning & XR Analytics

Aug 2024 – May 2025

Illinois Institute of Technology, Chicago, IL

- Worked in 2 research labs, **Social Spatial Interaction (SSIL) Lab** and **Magnetic Resonance Technology Discovery (MRTD) Lab**, on applied AI projects in extended reality (XR) motion analytics and MRI-based neural implant stability analysis.
- At SSIL Lab - converted and standardized XR motion datasets into BIDS format, enhancing accessibility for research in spatial computing and analyzed motion-tracking data to study human behavior and interactions in Extended Reality (XR) environments.
- At MRTD Lab - assessed neural implant displacement in longitudinal brain MRI data by segmenting implants via ITK-SNAP and computing 3D angular shifts using PCA and quaternion analysis, supporting clinical interpretations of post-operative stability.

System Engineer

Jan 2020 – Sep 2023

Tata Consultancy Services, New Delhi, IND

- Designed and developed enterprise-level applications using Java Spring and Hibernate for leading healthcare organizations.
- Led migration projects upgrading legacy Java Spring applications to the latest Spring Boot 3 framework.
- Migrated applications to Azure Cloud, optimizing resource utilization and implementing CI/CD automation with Azure DevOps.
- Maintained and updated MySQL databases, ensuring database performance and data integrity.
- Utilized Git for version control and collaborated with cross-functional development teams to ensure smooth project delivery.
- Participated in Agile sprints, including daily stand-ups, sprint reviews, and retrospectives to ensure timely deliverables.

PROJECTS

Machine Learning A-Z Hands On Projects in Python for Data Science (2025)

Feb 2025 – Apr 2025

- Hands on implementation of core and advanced machine learning concepts including regression, classification, clustering, association rules, reinforcement learning (UCB, Thompson Sampling, Q-learning), NLP pipelines, ANN/CNN architectures, PCA/LDA for dimensionality reduction, and advanced boosting techniques (XGBoost, CatBoost). Includes complete Python code, handwritten notes, and real-world dataset experiments following the full machine learning lifecycle.

CS512 – Computer Vision

Aug 2024 - Nov 2024

- Hands on implementation of core Computer Vision concepts including matrix operations, geometric transformations, filtering, edge detection, robust estimation, and deep learning models (CNNs, VGG/ResNet, U-Net, YOLOv3, ViT). Built and trained models on real datasets like CIFAR-10 and Oxford-IIIT Pet using Python, OpenCV, and TensorFlow.