Tushar Aggarwal

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Education

Indian Institute of Technology **Aug. 2024 – May 2025**

Minor in Artificial Intelligence *Ropar, India*

Courses: *Python Programming with Prompting, Mathematics for Machine Learning, Supervised Learning, Semi-Supervised Learning, Reinforcement Learning, Neural Network, Deep Learning, Large Language Models, Natural Language Processing, Computer Vision*

Delhi Technological University **Aug. 2018 – May 2022**

Bachelor of Technology - Mechanical with specialization in Automotive; GPA: 8.08/10 *Delhi, India*

Courses: *Programming Fundamentals, Data Structures, Operating Systems, Computer Networking, Competitive Programming*

Scholastic Achievement: *Department Rank 1 in 5th Semester in a batch of 65 students.*

Experience

Plunes HealthCare | *Senior Software Developer* **Sep 2024 – Present**

Developing AI-driven solutions and scalable systems, enhancing operational efficiency and driving business growth.

- Developed an AI-powered tool to extract structured data from hospital bills and discharge summaries (PDFs/images), improving the claim processing efficiency by **78%** and significantly enhancing operational turnaround times.
- Collaborated across teams to integrate microservices, ensuring seamless migration of notification systems and maintaining uninterrupted user communication.
- Transitioned the company's website to Next.js, reducing page size by **50%**, improving SEO, and enabling real-time content management via the CRM panel.
- Mentored and managed new hires, fostering their growth and guiding them to develop innovative solutions, alleviating workloads, and promoting a collaborative work environment.
- NodeJS, ReactJS, MongoDB, Kafka, Kubernetes, Next.js, Tesseract OCR, EasyOCR, Python (NLP).

Chegg Inc | *Software Development Engineer & Subject Matter Expert* **Jan 2022 – May 2024**

Gained exposure by working 2.5 years in a global organization to build end-to-end products with Business Intelligence to create software solutions. Instructed a diverse group of high school and graduate students from around the world.

Product Developent

- Engineered and optimised **10+** software solutions, reducing system errors by **40%**, improving user experience, contributing to revenue growth.
- Led cross-functional collaboration across six teams, producing technical documentation and scalable APIs, enhancing development efficiency and product quality.
- Integrated a feedback mechanism in Chegg's grading system, increasing efficiency by **45%** & boosting user satisfaction.
- Developed SME dashboard, streamlining performance evaluations, improving managerial feedback processes by **30%**.
- Built a Resume Builder for mentees, increasing resume shortlisting rates by over **30%**.
- Refactored React code to prevent multiple re-renders, optimized state management, & reduced first paint time by **40%**
- Identified and resolved software bugs, reducing post-launch issues by **60%** and improving UI performance by **15%**.
- Tech Stack Used: ReactJS, NodeJS, NextJS, PostgreSQL

Technical Tutoring

- Taught and mentored over 4000 learners in Data Structures, Algorithms, and Fullstack Development. Engaged with learners on a one-to-one basis from across the globe, providing timely and accurate solutions to their doubts.
- Effectively addressed technical questions and reviewed checkpoint submissions, ensuring the quality of learning material.

Achievements

- **Spot Award**: Recognized for significant contributions to key projects like the Content QC System and Topic Tagging. Demonstrated swift adaptation to new processes and technologies, while delivering high-quality work on time.
- **Budding Rookie Award**: Awarded for early promise and excellence as a new team member, for the period of Q2-2023, showcasing proactive learning, seeking guidance from senior engineers, and collaborating effectively with cross-functional teams to ensure project success.

Delhi Technological University | *Research Intern* **May 2021 – Aug 2021**

Reviewed machine learning models to predict accident frequency and severity for improved safety insights.

- Evaluated the efficacy of various computer intelligence strategies, including K-Nearest Neighbors (KNN) and Random Forest, in predicting the frequency and severity of accidents, analyzing patterns and trends in accident occurrences.
- Employed Support Vector Machine (SVM) and Decision Trees to examine key performance parameters, assessing the prevalence of accidents and understanding their underlying causes and characteristics.
- Leveraged advanced analytical techniques in machine learning to enhance predictive capabilities, contributing to the development of safer environments and improved safety measures.

Projects & Publications

Language Translation Model & Symmetric Cryptography System **Github**

- Developed a transformers-based model for English-Spanish translation, achieving a high BLEU score of 75.36.
- Implemented advanced model architecture, optimizing performance for accurate text translations.
- Currently developing a symmetric cryptography system using transformers for secure, end-to-end communication, resistant to third-party interference.

Paytm Wallet | *Next.js, ExpressJS, Turborepo, Postgres, Prisma, Recoil, NextAuth Tailwind* **Live** | **Github**

- Developed a wallet app allowing users to securely withdraw money from bank accounts and transfer it to contacts.
- Integrated secure payment workflows, including token generation for payments and webhook-based balance updates.
- Built and deployed CI/CD pipelines, automating testing & deployment in Dockerized environments to an EC2 server.

Titanic Survival Prediction | *Python, Numpy, Pandas, Matplotlib, Seaborn* **Github**

- Developed a machine-learning model for predicting passenger survival in the Titanic shipwreck.
- Conducted comprehensive data analysis and visualization, uncovering patterns and trends in the Titanic dataset.
- Implemented object-oriented programming practices such as inheritance to create different account types and databases.

T. Aggarwal et al. "Energy Storage System with Artificial Neural Networks using PI Hybrid Controllers," IEEE PECCON 22

- Proposed a unique method of error reduction by using an ANN and pi controller together for noise fluctuations.

Technical Skills

Languages: Python, Java, C, HTML/CSS, JavaScript, TypeScript, SQL
Frameworks/Tools: NodeJS, ExpressJS, Next.js, ReactJS, Prisma, Django, Numpy, Pandas, Matplotlib, Tensorflow, Keras, Scikit Learn, GraphQL, Redis
DevOps: Git, Docker, CI/CD, WebSockets, Kafka, Kubernetes
Databases: PostgreSQL, MongoDB

Honors and Awards

FSEV Concept Challenge 1st runner-up, Software and Intelligence Integration 2021
Shell Eco Marathon Global Winner, Pitch the Future 2021
Shell Eco Marathon Best Vehicle Design - Asia 2020, Malaysia
Digital Citizenship and Cyber Wellness Olympiad Awardee, under the two top categories.
Microsoft Office PowerPoint 2013 specialist 4th position all over India in COMPUDON season VIII

Additional Certification

Machine Learning Specialization (Stanford University and DeepLearning.AI)
Machine Learning Essentials - Master core ML concepts (Coding Minutes)
Competitive Programmer's Core Skills (Saint Petersburg State University)
Crash Course on Python (Google)

Leadership / Extracurricular

Those In Need | *Volunteer (Intermediate Badge)* **May 2020 – present**

- Led the creation of a user-friendly web application with chatbot integration to streamline pandemic fundraising efforts.
- Organized learning workshops for children, promoting educational growth and community engagement.
- Championed workplace inclusivity by conducting awareness sessions on gender diversity and organizing impactful social welfare programs.

Team Defianz Racing – DTUSDC | *Software Department Lead* **Apr 2021 – May 2022**

- Designed and implemented an Extended Kalman Filter (EKF)-based SLAM system integrating 3D LiDAR and odometry data, achieving 98% real-time localization accuracy in dynamic environments.
- Built a driverless race car perception system using Robosense M1P LiDAR and Microsoft Kinect Camera, combining sensor fusion and adaptive point cloud processing to improve cone detection and ground detection accuracy by 70%.
- Trained a CNN for LiDAR-based cone color detection and a YOLOv9 model for RGB-based cone classification, enhancing detection range by 120% and optimizing classification accuracy.
- Developed a robust pipeline synchronizing LiDAR and camera data for precise localization and classification of objects, ensuring seamless integration with the race car's autonomous systems.

Team DTU Supermileage | *Student Advisor and Head (Electronics Department)* **Aug 2018 – May 2022**

- Spearheaded a team of 50+ members to design an innovative in-wheel suspension system, achieving a 12% weight reduction and enhancing vehicle mileage.
- Developed an Advanced Driver Assistance System (ADAS) feature using OpenCV and dlib libraries to detect driver fatigue and improve road safety.
- Integrated lightweight engineering principles and cutting-edge software solutions to enhance vehicle efficiency and driver safety.