Prateek Ghosh

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Experience

School of Engineering and Applied Sciences, University at Buffalo **Oct 2025 - Feb 2026**

Research Intern *Buffalo, NY, USA*

- Achieved a 4.44 Mean Opinion Score (MOS) by curating a DiffWave pipeline for speech generation using mel-spectrogram conditioning and reverse diffusion training.
- Enhanced speech signal enhancement models by experimenting with LSTM and GRU architectures, resulting in surpassing WaveNet performance by 43%.
- Delivered 100% data completion by implementing a diffusion process with GNN and FGTI for vehicle speed imputation using PyTorch and Hugging Face.
- Processed and analyzed 100,000+ vehicle speed data samples, mitigating outliers and incompleteness due to weather conditions.

Deloitte US Offices of India Pvt Ltd **Jul 2021 - Jul 2025**

Software Developer - SAP *Hyderabad, India*

- Engineered a PII data-scrambling and compliance automation platform using Python and SAP ABAP, automating manual data-masking workflows and improving enterprise data-privacy compliance across CRM systems by 90%.
- Refactored legacy cloud-based systems in the Custom Code Decommission initiative; decommissioned 35K+ redundant objects, improved system response time by 45%; enabled a $350K project renewal through scalable backend redesign.
- Pioneered the implementation of 110+ production-grade model enhancements via Agile and CI/CD pipelines, while adhering to cross-team SLAs to 87% through test-driven feature development.
- Spearheaded the optimization of SQL queries, improving data retrieval speed by 10% while resolving 70+ critical bugs.
- Recognized with Deloitte's Applause Award for technical excellence and Cross-functional Collaboration on enterprise systems.

Central Tool Room & Training Centre (Govt. of India) **Nov 2019 - Dec 2019**

ML & AI Intern *Bhubaneswar, India*

- Trained a real-time human-figure detection model using TensorFlow CNNs; benchmarked 92% accuracy, reduced image-processing latency by 22%, and lowered false-positive rate by 8% through model tuning.
- Benchmarked classical ML models (KNN, SVM, Naïve Bayes) against deep-learning baselines; observed 10%+ accuracy improvement through efficient model tuning and dataset preprocessing pipelines using AI/ML frameworks (PyTorch).

Tata Motors South Africa Pvt Ltd **May 2019 - Jun 2019**

Software Developer Intern *Pretoria, South Africa*

- Developed an end-to-end automation system integrating Excel VBA, SQL, and live scanner data, enhancing production-line traceability and shop-floor preprocessing for vehicular manufacturing, increasing production from 11 units to 13 units daily.
- Automated the inventory-tally workflow, cutting cycle time by 90% and query latency by 98% across 9 vehicle models.
- Replaced external vendor software with an in-house data management platform, saving ZAR 15,000 annually and improving scalability, maintenance, and operational control.

Academic Research & Projects

Ozone Concentration Time-Series Forecasting **Feb 2026 - Feb 2026**

- Engineered a Multi-layer Perceptron for time-series forecasting of ozone concentrations, surpassing LSTM, GRU performance by 3%.
- Enhanced data processing through cleaning, imputation, and EDA of hourly meteorological data, creating a workable dataset of 24,000 data points.
- Designed a forecasting model to predict future ozone concentrations, informing corrective actions across 08 sites to mitigate UV sunlight exposure.
- Integrated tools like look-back and lag features to reveal patterns in long-term ozone concentration history across 08 sites.

Simulation of Autonomous Driving **Dec 2019 - Dec 2019**

- Delivered 92% accuracy with a custom CNN in Keras for steering prediction, using a manually collected dataset of 10,000+ images, post data augmentation. Sustained 95%+ lane-keeping accuracy and decreased steering error variance by 30%.

Education

University at Buffalo, SUNY **Aug 2025 - Dec 2026**

M.S., Computer Science (AI/ML Track)

- **Coursework:** Algorithm Analysis and Design, Data Intensive Computing, Computer Security

KIIT University **Jul 2017 - Aug 2021**

B.Tech, Electronics & Computer Science

- **Coursework:** Data Structures and Algorithms, Object-Oriented Programming, Operating Systems

Skills

- **Programming Languages**: Python, C, C++, MATLAB, JavaScript, Node.js, HTML, CSS
- **Core Competencies**: Diffusion models, Deep Learning, NLP, CNNs, Computer Vision, Time Series, LLMs, PCA, Mathematics, Statistics, Data Science, Data Visualization, Keras
- **Frameworks and Libraries**: TensorFlow, PyTorch, Keras, Scikit-learn, Hugging Face, Transformers
- **Databases**: MySQL, PostgreSQL, MongoDB, Snowflake
- **Cloud & DevOps**: AWS, GCP, Docker, Git, Bash, Spark, Hadoop, REST APIs, CI/CD pipelines, Linux
- **Enterprise Tech**: SAP ABAP, SAP MDG, Advanced Analytics, Cross-functional collaboration, ETL Processes, Power BI