

KSHITIJ ALWADHI

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EDUCATION

- ❖ **Purdue University** West Lafayette, IN
Master of Science in Computer Science (GPA: 4.0/4.0) 08/2023 - 05/2025 (Expected)
 - **Coursework:** Computer Networks, Software Engineering (Compilers Level Program Testing), Information Security, Algorithm Design and Analysis, Distributed Systems
 - **Teaching Assistant:** Plane Analytic Geometry And Calculus I (Fall 2023, Spring 2024)
- ❖ **Indian Institute of Technology, Delhi** New Delhi, India
Bachelor of Technology in Electrical Engineering (GPA: 3.93/4.0) 07/2019 - 05/2023
Minor in Computer Science (GPA: 4.0/4.0): [Dean's List 3 semesters]
 - **Publication:** A deep learning framework for the detection of tropical cyclones from satellite images. *IEEE GRSS*
 - **Research Thesis:** Demographic Prediction from Satellite Imagery using Deep Learning
 - **Teaching Assistant:** Natural Language Processing (Spring 2022), Introduction to Machine Learning (Fall 2022)
 - **Leadership Position:** Coordinator and Developer at DevClub - IIT Delhi
 - **CS coursework:** Operating Systems, Natural Language Processing, Deep Learning for Computer Vision, System Design Practices, Computer Architecture, Information Retrieval and Web Search, Machine Learning, Convex Optimization for ML

TECHNICAL SKILLS

Programming	C, C++, Java, Python, Go, Javascript, Rego
Development	NodeJS, React, Flutter, MySQL, MongoDB, Firebase, gRPC
DevOps	Docker, Kubernetes, Git, CI/CD (CircleCI), AWS, GCP
ML	TensorFlow, Pytorch, OpenCV, SciKit-Learn, LangChain, BigQuery, AutoML, Sagemaker

EXPERIENCE

- ❖ **DevRev.ai | MLE Internship** Bangalore, India
Topic: Developing a Retrieval Augmented Generation Chatbot 05/2023 - 07/2023
 - Led the development of a retrieval augmented conversational agent RPC from scratch. Implementation fetches neighbors from a vector DB, data from **S3** bucket and memory from **Redis**; currently the **top selling feature** of DevRev.
 - Implemented a custom *LangChain*-like solution for chaining LLM calls and added support for function calling. Created an RPC for converting natural language queries into API calls; integrated into a general purpose search bar.
 - Managed the migration of a microservice from Golang to Python to enhance the development of ML serving pipelines.
 - Established a comprehensive encoder benchmarking pipeline using **AWS SageMaker** for proprietary datasets.
- ❖ **DevRev.ai | SDE Internship** Bangalore, India
Topic: Adding support for third party integrations to the platform 05/2022 - 08/2022
 - Contributed to backend in **Golang** to support 2-way communication with other SaaS apps like Slack and GitHub.
 - Exposed internal workflows through RPCs to enable users to write automations using OPA policy **Rego**.
 - Worked on multiple integrations for Slack, leading to DevRev's **initial breakthrough** with their first customers.
- ❖ **Sharechat - Data Science | MLE Internship** Remote (Part-time)
Topic: Rule based modelling of DL models for Ads CTR prediction 12/2021 - 05/2022
 - Implemented a DNN model feeding in a large number of continuous & categorical features for ads CTR prediction; achieved test AUC score of 0.76 on Sharechat's proprietary dataset (3.5% improvement over existing implementation).
 - Formulated RuleNet for distilling rules based on features with historically consistent correlation into models prediction.
 - Productionized model using **GCP** for serving predictions; setup **Airflow** job for regular re-training from **BigQuery**.
- ❖ **QTIM Lab @ MIT-Harvard University | Research Internship** Remote (Part-time)
Topic: Characterisation of Impact of Label Noise on Federated Deep Learning & Data Valuation 08/2022 - 01/2023
 - Investigated Non-IID FL training routines (FedDC & FedProx) to evaluate models trained on heterogeneous datasets.
 - Incorporated Shapley values for data valuation & reducing the contribution of corrupted institutes during FL rounds.

PROJECTS

- **Distributed Systems:** Implemented a linearizable sharded key/value storage system using Paxos for fault tolerance and scalability to support cross-group transactions while ensuring robustness against system failures and network partitions.
- **Program Analysis:** Developed a Valgrind tool for dynamic analysis, detecting data dependencies in C code. Also implemented an LLVM module for static analysis, identifying memory leaks in C programs.
- **Vulnerabilities and Attacks:** Investigated vulnerable C codes susceptible to stack-smashing attacks. Attacked diverse vulnerabilities including buffer overflow and DEP bypass while using GDB for debugging and analyzing memory locations.
- **Network Bandwidth Allocation:** Developed and implemented a linear programming solution for optimal bandwidth allocation in multi-stream video analytics (using YOLOv8) within edge computing.
- **Severe Thunderstorm Prediction using DL:** Created a pipeline using Mask R-CNN for segmentation and wind speed filter to identify cyclone formation visual signatures in satellite imagery, enabling short-term prediction.