

# FENIL DENISH BARDOLIYA

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## Education

### Master of Science in Computer Science

Aug 2023 – May 2025

Arizona State University, Tempe, AZ, USA

Coursework: Digital Video Processing, Natural Language Processing, Planning and Learning Methods in AI, Biocomputing, Information Assurance and Security, Image Analytics & Informatics, Data Mining, Statistical Machine Learning, Frontier Topics in GenAI

### Bachelor of Engineering in Computer Science

Aug 2019 – Jul 2023

Birla Institute of Technology and Science Pilani

Coursework: Probability and Statistics, Object Oriented Programming, Database Systems, Data Structures and Algorithms, Operating Systems, Design and Analysis of Algorithms, Network Programming, Software Development for Portable Devices, Reinforcement Learning, Machine Learning, Image Processing, Computer Vision

## Skills

**Programming Languages:** Python, Kotlin, Java, C++, C, SQL, JavaScript, HTML, CSS, XML

**Databases:** Firebase Firestore, Firebase Realtime Database, MySQL, MongoDB

**Libraries/Technologies/Frameworks/Tools:** Scikit-learn, TensorFlow, Keras, PyTorch, HuggingFace, OpenCV, Albumentations, Pillow, Matplotlib, Numpy, Pandas, NLTK, Spacy, Networkx, REST API, Git, JUnit, Docker, GCP, Wireshark, AutoML

**Concepts:** Deep Learning, Machine Learning, Large Language Models, Computer Vision, Generative AI, Image Processing, Software Development, Android App Development

## Experience

### Complex Data Reasoning & Analysis Lab (CoRAL)

Aug 2024 – Present

NLP Researcher

Tempe, AZ, USA

- Engineered a novel agentic framework for transforming unstructured textual data into structured tables, prioritizing data coverage, and minimizing information loss.
- Developed an innovative schema generation strategy that enabled comprehensive and dynamic table structure planning.
- Conducted rigorous experimental evaluations on multiple state-of-the-art Large Language Models (Gemini 2.0, GPT-4o, Llama 3.3 70B, etc.) and diverse evaluation metrics (5+), demonstrating robust generalization and superior performance compared to existing methods.
- Paper under review at ACL2025.
- Mentored 4 teams on 3 different projects for the NLP course project.

### Samsung Semiconductor India Research

Jan 2023 – Jul 2023

Assistant Engineer

Bengaluru, India

- Built scripts to automate network module data capturing and static analysis. Proposed development of anomaly detection for first-level call logs.
- Developed a hybrid LSTM encoder-decoder architecture for anomaly detection of SIP and IMS failures over VoLTE networks.
- Attained nearly 80% accuracy in detecting 25 known and some unknown errors.

### CSIS, BITS Pilani

Sept 2022 – Dec 2022

Teaching Assistant

Hyderabad, India

- Conducted 10 labs on Android Programming and App development.
- Designed 4 quizzes to assess more than 50 students. Restructured the course to Android Development in Kotlin.
- Reviewed over 10 project ideas and mentored over 50 students for group projects.

### Blyndr

May 2021 – August 2021

Android App Developer

Remote

- Managed two teams to work on the UI design and database creation. Developed a blind dating app for the LGBTQIA+ community at a startup. Adopted MVVM architecture pattern, Firebase Realtime database, and Firebase Cloud Messaging.
- Published the Blyndr app on Google Play with 500+ downloads and users across 10 countries.

## Projects

### Exploring Unlearning in State Space Models

Aug 2024 – Dec 2024

- Compared performance of Machine Unlearning techniques in State Space Models and Transformer-based models for privacy.
- Implemented Gradient Ascent (GA) and Gradient Ascent with Mismatch (GA + Mismatch) algorithms for unlearning for OPT-1.3B, Pythia-1.4B (Transformers), and Mamba-1.4B (SSM).
- Evaluated model performance using metrics: Perplexity, BLEU, ROUGE-L, and BLEURT across datasets (PKU-SafeRLHF, TruthfulQA).
- Delivered insights highlighting SSMS' resilience to catastrophic forgetting and slower adaptability to unlearning techniques compared to Transformer-based models.

### Analyzing and Mitigating Hallucinations in MLLMs

Aug 2023 – Dec 2023

- Evaluated the performance of Multimodal Large Language Models (InstructBLIP, LLaMA-Adapter-V2, LLaVA) on widely-used benchmark datasets: VQAv2 (real-world images) and CLEVR (synthetic images)
- Analyzed 6 different image augmentations (e.g., Gaussian Noise, Zoom Blur) and 3 reasoning-based language augmentations (e.g., conjunctions, disjunctions)
- Established a new benchmark for assessing the robustness and out-of-distribution behavior of MLLMs.
- Published findings in CVPR Workshop, EVGENFM2024. Paper title: "Evaluating Multimodal Large Language Models across Distribution Shifts and Augmentations"