Andrea Neenu Jose

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Experience

Data Scientist *Tokyo, Japan*
Accenture Japan LTD *Dec 2024 – ongoing*

- Developed a multilingual **LangChain-Dify** chatbot that converts unstructured inputs into structured specs for automated ServiceNow form creation, reducing man hours per form from **10-12 hrs** to under **15 mins**.
- Optimized **JA-EN** translations via **prompt-tuned LLMs** with Pydantic parsing & automated self-correction mechanisms.
- Addressed **hallucination** in LLM outputs by combining **chunking**, **few-shot prompting** and **RAG-based** grounding layer with **SysID-level mapping**, tying all responses to verified records to prevent unrealistic outputs.
- Developed a **Python**-based Transfer Check Tool for automated cross-environment data validation in ServiceNow, integrating **Azure Key Vault** for secure credential retrieval.
- **Automated** chatflow testing via Dify's API, implementing **parallel execution** to cut testing time by ≈ **90**%.
- Built **CI/CD** pipelines with **Ansible** and **Azure Pipelines** to automate deployment, configuration, and testing, significantly improving setup speed and reliability for client demo environments.

Quant Analyst Intern *Gurgaon, India*
Futures First *May 2023 – July 2023*

- Analyzed **40+** years of macroeconomic data across the US, UK, and Eurozone to identify trends and market implications.
- Evaluated central bank **reaction functions** to macro data release & quantified their impact on **Eurodollar futures curve**.
- Implemented advanced interest rate models such as **Vasicek, CIR, HJM** and **Hull-White** models in Python, using SDE-based formulations to plot **forward curves**, generate **trading signals**, and conducted **comparative model analysis**.

Projects

Crowd Panic Simulation | *Prof. Sujin Babu* | Out of Equilibrium Group *report*

- Designed and assessed simulation-based strategies to reduce fatalities in high-density panic situations at refugee camps.
- Studied agent-based, entity-based, and flow-based crowd models and experimented with Euler and RK4 numerical schemes.
- Handled the **packing problem** to prevent spawn-time blowups, applied numerical mollification to prevent force singularities, tuned **RK4 parameters** for stable integration, and optimized **obstacle geometry** and **placement** to reduce fatalities.
- Analyzed the factors behind death counts and introduced a real-world–feasible solution that cut the death rate by **70%**.

Quantum Plasma Simulation | *Prof. Amita Das* *report*

- Identified limitations in classical plasma models and determined the need for a quantum-hydrodynamic simulation approach.
- Re-derived and validated the **Wigner–Poisson formulation** to incorporate **quantum corrections** into the simulation.
- Implemented a high-performance **N-body** simulation using a **particle-in-cell (PIC)** approach, optimizing memory usage & parallel-processing algorithms, added Python wrappers to accelerate output handling and speed up visualization by **10X**.
- Analyzed simulation outputs and validated results against established literature, confirming the accuracy of the simulation.

Quora Question Duplicate Detection *project*

- Implemented an **NLP-based** ML pipeline for classifying question pairs as duplicates for more **efficient query retrieval**.
- Applied **TF-IDF** and **Word2Vec** to capture semantic similarity and engineered features like word overlap, length difference, and statistical metrics including **Cosine, Jaccard & Levenshtein** distances to enhance model performance.
- Evaluated multiple models; hyperparameter-tuned XGBoost achieved the best performance with the least log loss of **0.362**.

Technical Skills

Languages: Python, C++, C, MATLAB, Java, JavaScript, HTML, CSS, SQL, Fortran
Technologies: Tensorflow, Keras, Numpy, PyTorch, Scikit-Learn, Pandas, LangChain, REST API, FastAPI, LaTex, Git, Docker, Bash Scripting

Education

Indian Institute of Technology Delhi *Nov 2020 – Aug 2024*
B.Tech in Engineering Physics - 7.862/10

- **Coursework:** Computational Physics, Statistical Physics, Mathematical Physics, Financial Institutions and Markets, Calculus, Linear Algebra and Differential Equations, Intro. to Computer Science

Scholastic Achievements

- **Joint Entrance Examination Advanced 2020**: Secured **All India Rank 4381** among **150,000**+ students
- **COMEDK 2020 :** Secured **rank 130** out of **70,000+** students who appeared for the UG entrance test
- **AISSCE Merit Award 2020**: Awarded for being among the **top 0.1%** of **1.2 million** candidates in Physics