PRANAV DULEPET

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EDUCATION

B.S. in Computer Science - Machine Learning, University of Maryland, College Park Expected May 2025
Honors: Computer Science Honors, Dean's List, QUEST Honors Program
Courses: Algorithms, Data Structures, Object-Oriented Programming I/II, Organization of Programming Languages, Data Science, Computer Vision, Linear Algebra, Calculus I/II, Probability & Statistics, Discrete Structures

SKILLS

Languages/Technologies Python, Java, C, Swift, Ruby, JavaScript, Git, AWS, OpenAI Gym & GPT, LLMs
Libraries/Frameworks TensorFlow, PyTorch, Keras, FastAPI, Pandas, MongoDB, Firebase, React, MSFT Z3

EXPERIENCE

Software Developer Intern (ML), ***Amazon*** Jun 2024 - Aug 2024
- Developed pipeline to generate personalized Alexa Routine recs based on customer-Alexa interactions
- Built data pre-processing framework and used over 60TB of interaction data
- Inferenced/fine-tuned Claude 3/3.5 Sonnet along with intricate prompt engineering to generate Alexa Routine payloads

Software Engineer Intern, ***Fidelity Investments*** Jun 2023 - Aug 2023
- Built LinkedIn-like MyNetwork recommendation engine for internal Fidelity app for 80k employees
- Achieved recommendations with 98% satisfaction rate during initial user testing
- Used Python, PyTorch, DGL, Swift to build a custom Graph Neural Network to train and inference
- Identified bugs/improvements in internal app and increased code coverage by 50%

Undergraduate Researcher, ***PIRL (PI: Professor Ramani Duraiswami)*** Jan 2023 - Present
- Developed a factorable attention mechanism reducing transformers' complexity to $O(N)$, inspired by fast multipole and Gauss transform methods (view preprint, submitted to ICML 2024)
- Ensured this streamlined process still captures complete data relationships, avoiding data loss often seen with similar methods
- Previously worked with Swift, LiDAR, Autonomous Reinforcement Learning simulations

Machine Learning Intern, ***Capital One*** Jan 2023 - May 2023
- Implemented NMSLIB similarity search frameworks on financial graph embeddings as part of the Enterprise Graph Services Team to detect transaction fraud
- Applied to samples of up to 5 million in size with high-dimensional outputting >90 recall (success rate)
- Tested framework with Merchant-Account data resulting in similar recall

Software Engineer Intern, ***Evozyne*** Jun 2022 - Aug 2022
- Developed SMT solvers (Z3) in Python to decrease runtime of modeling the Gene Synthesis process by 5x while maintaining precision
- Visualized Gene Synthesis data to determine where the current model lacked efficiency and precision using ligation matrices, statistical fidelity, and Seaborn plots
- Explored SMT's potential use cases in Gene Regulation Networks, Reversing Genomes, Protein Folding

PROJECTS

agora. *Large Language Models, LangChain, Python, SwiftUI, Swift, AWS, MongoDB, Rest APIs*
Developed iOS app and fine-tuned LLM to provide personalized and affordable meals for college students. Used LangChain to format and parse output. Adapted Stable Diffusion API to generate visuals. Integrated Amazon Fresh and Kroger API for option to buy ingredients. (website link)

College RO *Swift, SwiftUI, Python, Node.js, Rest APIs, MongoDB, AWS, Google/Firebase Analytics*
Launched CollegeRO on the App Store helping college students find research opportunities, reaching a peak of 1.5k app units. (app link)

Things Near Me *Full-Stack iOS Development, Swift, UIKit, Firebase*
Developed Things Near Me, for people to share the availability of supplies in the neighborhood, reaching a peak of 1.6K app units. (app link)