Pranav Kizhakkevellat Nair

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EDUCATION

Northeastern University, Boston, MA **May 2024**
Master of Science in Robotics
Related Courses: Reinforcement Learning, Pattern Recognition & Computer Vision, Data Visualization

SRM Institute of Science and Technology, Kattankulathur, India **May 2022**
Bachelor of Technology in Computer Science and Engineering
Related Courses: Artificial Intelligence, Data Structures & Algorithms, Object Oriented Design & Programming

TECHNICAL SKILLS & KNOWLEDGE

Languages	Python, C++, C, R, SQL, Matlab
Databases	MySQL, PostgreSQL, SQL Server, ChromaDB
Frameworks/Libraries/Tools	Git, PyTorch, Tensorflow, LangChain, OpenCV, Pandas, Scikit-Learn, NumPy, OpenMP, OpenMPI, AVX, CUDA, Docker, Streamlit, Microsoft Power BI, Tableau, Matplotlib, Seaborn, Jira, Confluence, Bitbucket, VS Code, Jupyter Notebook, PyCharm

EXPERIENCE

Multicoreware Inc., Champaign, IL **September 2024 - Present**
Software Engineer
- Led a team to develop high-performance computing solutions on ML systems utilizing CPU parallelization (OpenMP, AVX2) and GPU acceleration (CUDA), achieving 10x performance improvement across different hardware architectures
- Enhanced LLVM-MCTOLL Binary Translator for a customer to convert ARM architecture Android APKs to x86. Implemented performance optimizations that reduced execution time by 33%
- Designed and implemented testing and validation pipelines through Shell and Python scripting to ensure output correctness
- Analyzed profiling data from Android Studio and Nvidia Nsight to benchmark performance and identify & eliminate bottlenecks
- Collaborated in Agile Scrum development environments using industry-standard tools and methodologies, contributing to cross-functional team success and project delivery

Fiserv Inc., Chennai, India **June - July 2021**
Technical Program Analyst
- Executed comprehensive ETL processes on complex employee datasets utilizing advanced Microsoft Excel functions for data cleaning, clustering, and transformation to ensure optimal data quality and consistency across multiple vendor sources
- Developed and deployed interactive Power BI dashboards featuring dynamic visualizations that provided stakeholders with real-time visibility into off-roll employee capabilities, skillset distributions, and geographic allocation patterns
- Collaborated effectively within an Agile Scrum environment to deliver data-driven insights and actionable workforce analytics, facilitating strategic decision-making regarding external vendor relationships and resource allocation optimization
- Presented comprehensive analytical findings and dashboard demonstrations to key stakeholders, translating complex data insights into clear business recommendations, supporting strategic workforce planning and vendor management initiatives

PROJECTS

LLM Cold Email Generator, GitHub Link
- Developed an AI-powered cold email generator using LangChain and LLMs like Llama and OpenAI GPT-OSS that parses job postings and resumes to generate personalized application emails automatically
- Implemented semantic search with ChromaDB vector database to match candidate projects with job requirements, automatically identifying relevant portfolio work for each application
- Built a Streamlit web application for model deployment with PDF parsing, web scraping, and prompt engineering to streamline the job application workflow from URL input to email generation

3D Structure From Motion, GitHub Link
- Implemented a 3D structure-from-motion pipeline to generate sparse point cloud reconstructions from multiple 2D images using SIFT feature detection and keypoint matching
- Geometrically triangulated the 3D coordinates from corresponding 2D image features using the pinhole camera model
- Optimized reconstruction accuracy using GTSAM library for bundle adjustment to refine camera poses and 3D point positions

Gesture-Driven Simulated Car, GitHub Link
- Manipulated car movement in Gazebo by applying differential drive control using ROS on Linux and hand gestures
- Evaluated the difference in performance between a computer vision model trained only on RGB images and one with RGB images along with the 21 hand keypoints extracted by Google MediaPipe
- Achieved 84.4% accuracy with RGB images and 94.8% accuracy with RGB images + keypoints for gesture recognition
- Implemented Reduce Plateau scheduler to adjust optimizer's learning rate based on validation accuracy to prevent overfitting