Pranav Kizhakkevellat Nair

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SUMMARY

I am a versatile software engineer with expertise spanning machine learning, systems programming, and performance optimization. I have demonstrated proficiency in optimizing code performance and developing automated testing pipelines. My technical foundation includes experience with Python, SQL, and frameworks like PyTorch, TensorFlow, and Scikit-Learn for Data Science and ML applications, alongside systems programming skills in C++, CUDA, and OpenMP for high-performance computing. My experience includes developing mobile applications, interactive dashboards, and computer vision systems, with a track record of delivering measurable performance improvements.

TECHNICAL SKILLS & KNOWLEDGE

Languages	Python, C++, C, R, SQL, Matlab
Frameworks/Libraries/Tools	Git, PyTorch, Tensorflow, Keras, OpenCV, Pandas, Scikit-Learn, NumPy, OpenMP, CUDA, Microsoft Power BI, Tableau, Matplotlib, Seaborn, Jira, Confluence, Bitbucket

EXPERIENCE

Multicoreware Inc., Champaign, IL **September 2024 - Present**
Software Engineer

- Enhanced LLVM-MCTOLL binary translation framework for ARM32 to x86 conversion of Android APK shared libraries, implementing performance optimizations that reduced execution time by 33%
- Designed and implemented comprehensive testing and validation pipelines to ensure translation correctness, including automated benchmarking systems and Android Studio profiling integration for performance analysis
- Developed high-performance computing solutions utilizing CPU parallelization (OpenMP, AVX2) and GPU acceleration (CUDA) to optimize algorithm execution across different hardware architectures
- Collaborated in Agile 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 (Intern)

- Executed end-to-end data analysis using advanced Microsoft Excel, including cleaning, transforming, and preparing data from multiple sources as part of an ETL (Extract, Transform, and Load) process to ensure data quality and consistency
- Developed an interactive Power BI dashboard that provided stakeholders with visibility into the capabilities, skillsets, and distribution of off-roll employees linked to Fiserv via external vendors, supporting data-driven workforce decisions

Agrix, Chennai, India **Feb - July 2021**
Mobile Application Developer (Intern)

- Responsible for leading a team and conducting biweekly meetings in developing a Flutter-based Android GPS tracking application for monitoring company tractors and machinery
- Integrated the app with OpenStreetMap API to provide real-time location visibility and implemented Firebase backend for storing operational metrics

PROJECTS

Parallel Processing Image Convolution, GitHub Link

- Implemented image convolution algorithms with Gaussian filtering and engineered parallel processing solutions using OpenMP, AVX2 intrinsics for CPU acceleration, and CUDA for GPU computation
- Built an interactive GUI enabling real-time algorithm execution and performance comparison across multiple devices
- Demonstrated significant performance improvements through targeted optimization techniques and cross-platform analysis

Gesture-Driven Simulated Car, GitHub Link

- Manipulated car movement in Gazebo by applying differential drive control using ROS and recognized 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

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