

# Pranav Kizhakkevillat Nair

pranavkn01@gmail.com +1 857-376-1899 linkedin.com/in/pranav-k-nair pranav-k-nair.github.io

## EDUCATION

<b>Northeastern University</b> , Boston, MA <i>Master of Science in Robotics</i>	<b>May 2024</b>
<b>SRM Institute of Science and Technology</b> , Kattankulathur, India <i>Bachelor of Technology in Computer Science and Engineering</i>	<b>May 2022</b>

**Related Courses:** Reinforcement Learning, Pattern Recognition & Computer Vision, Data Visualization

**SRM Institute of Science and Technology**, Kattankulathur, India

*Bachelor of Technology in Computer Science and Engineering*

**Related Courses:** Artificial Intelligence, Data Structures & Algorithms, Object Oriented Design & Programming

## TECHNICAL SKILLS & KNOWLEDGE

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

## EXPERIENCE

<b>Multicoreware Inc.</b> , Champaign, IL <i>Software Engineer</i>	<b>September 2024 - Present</b>
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- Led a team to develop high-performance computing solutions on ML systems utilizing CPU parallelization (OpenMP, AVX2) and GPU acceleration (CUDA) to optimize algorithm execution across different hardware architectures, and improved the performance by 10x
- 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 Nsight to benchmark performance and identify bottlenecks within the code
- Collaborated in Agile Scrum development environments using industry-standard tools and methodologies, contributing to cross-functional team success and project delivery

<b>Fiserv Inc.</b> , Chennai, India <i>Technical Program Analyst</i>	<b>June - July 2021</b>
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- 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

### **Fraud Detection System**, [GitHub Link](#)

- Developed an end-to-end system performing Exploratory Data Analysis (EDA) and hypothesis testing, feature engineering, data preprocessing to handle mixed data types, model development, and model deployment
- Built 6 ML models and compared them using cross-validation. Optimized performance with hyperparameter-tuned XGBoost
- Deployed the final model through a web application via Streamlit for real-time fraud detection predictions

### **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
- Performed geometric triangulation based on the pinhole camera model to recover 3D coordinates from corresponding 2D image features
- 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