Krishna Praneet Gudipaty

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EDUCATION

University of Massachusetts Amherst — **Amherst, MA, USA**
Master of Science in Computer Science — *Sep 2022 - May 2024*
Courses: Theory & Practice of Software Engineering, Distributed & Operating Systems, Quantum Information Systems, Machine Learning, Applied Information Retrieval, Systems for Data Science — *CGPA: 3.95/4.0*

Indian Institute of Technology Madras — **Chennai, TN, India**
Bachelor of Technology in Metallurgical and Materials Engineering — *Aug 2016 - Dec 2020*
Courses: Data Structures and Algorithms, Cloud Computing, Machine Learning, Numerical Methods, Linear Algebra, Probability & Statistics, Computational Engineering — *CGPA: 8.75/10.0*

RESEARCH PROJECTS

UMass Amherst - Software Tools for Quantum LDPC Decoders — **Amherst, MA, USA**
Stack: Julia — *May 2023 - Present*
- Working on developing tools and new modifications to the existing quantum decoding algorithms to fine-tune them
- Working on fast implementation and parallelization of Python LDPC - Belief Propogation Decoders library in Julia

IIT Madras - Machine Learning for predicting Platinum force fields — **Chennai, TN, India**
Stack: Python – Pandas, NumPy, Scikit Learn; VASP with Mpich on IBM Super Cluster — *Dec 2020 - Jul 2022*
- Researched on a non-linear Machine Learning based framework for statistically predicting Platinum force fields from coordinate data
- Developed a numerical fingerprinting algorithm for representing invariance in translation and rotation of 3D data to feature vectors
- Achieved performance of 1-5% variation in MAE using a tuned Kernel Ridge Regression model using 10-fold cross validation method

Boeing - Research Intern - ADR Software — **Bangalore, KA, India**
Stack: GNU Octave; MATLAB — *Jun 2018 - Jul 2018*
- Researched and developed algorithm for defect recognition which is forecasted to improve the efficiency of NDT process by 50%
- Achieved a mean accuracy of 95% on quantifying the volume of defective segments through the use of the proposed algorithm

WORK EXPERIENCE

Deskera - Software Development Engineer — **Pune, MH, India**
Stack: Java - Spring Boot; Spring Kafka; ReactJS; PostgreSQL; Docker; Kubernetes; Jenkins — *Dec 2020 - Jul 2022*
- Developed microservices using Java Springboot and Apache Kafka for no-code workflow integrations for CRM and HRMS apps
- Researched and developed unified cart integration interface to automate inventory and payments synchronization with e-retail stores
- Optimized performance for large scale data transfer through events and multi-threading on multiple AWS servers using Kubernetes
- Onboarded senior and junior team members onto the cart integration project and compiled user and developer documentation

TECHNICAL ABILITY

- **Languages**: Java, Python, PostgreSQL, C++, JavaScript, HTML/CSS
- **Libraries**: ReactJS, NumPy, Pandas, Matplotlib, PyTorch, PySpark, Tensorflow, Scikit-Learn
- **Tools/Frameworks**: Springboot, Amazon Web Services (AWS), Apache Spark, Apache Kafka, Docker, Kubernetes, Jenkins, Maven, Gradle

ACADEMIC PROJECTS

Stock Recommendation System using Spark | **Code** — *Apr 2023 - May 2023*
- Preprocessed data generated from NASDAQ stock market in past 20 years for over 1500 stocks using Pyspark from DynamoDB
- Working on additional feature generation to circumvent linear correlation between features for analyzing the time series data

Elevation based Navigation System | **Frontend** | **Backend** — *Oct 2022 - Dec 2022*
- Built a navigation app using JavaScript and React to suggest routes in Amherst by considering elevation gain along the path
- Examined processing time and performance under load for the application backend using different algorithms Dijkstra's, A* and BFS

Spark Tweet Streaming application | **Code** — *Jan 2020 - May 2020*
- Built a Spark Streaming application for retrieving and segregating live tweets based on geographic origin using PySpark and Kafka
- Analyzed and identified frequent words and word associations using MLLib's FP-growth algorithm for the last 10-minute interval
- Deployed application on GCP using Compute Engine and created a UI with options to adjust mining parameters and view results

Applications of Numerical Computational techniques in material phenomena — *Jul 2018 - Nov 2018*
- Simulated dendritic crystal growth by solving differential equations iteratively using the Finite Difference Method
- Modeled isotropic/anisotropic DLA of particles by the numerical implementation of the principle of random walk
- Performed microstructure image compression and reconstruction using Principal Component Analysis