Girish Kulathumani

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TECHNICAL SKILLS

Programming & Markup Languages: Python, C++, Java, HTML, CSS, JavaScript, SQL(Oracle, MySQL)
Libraries and Tools: CUDA, RAPIDS, Tensorflow, PyTorch, Apache Sparks, Apache kafka, Sklearn, Pandas, Numpy, Seaborn, Mathplotlib, OpenCV, Git, Docker, Kubernetes, Flask, HuggingFace
ML Architectures: CNN, LSTM, YOLO, Transformers(BERT, LSTM), RoBERTa

PROJECTS

High Performance(CUDA+Parallel) Real-time Sentiment Analysis for Stock Trading

CUDA, WSL, Multiprocessing, RAPIDS, Apache Spark, Apache Kafka, Docker, Python   *Jan 2024 - Apr 2024*

- Reduced the time taken for sentiment analysis on multiple news articles dynamically from 8 minutes to 10 seconds for any stock.
- Enabled real-time analysis of financial news and social media data to identify market sentiment and support informed trading decisions.
- Reduced sentiment analysis processing and visualising time, leading to improved decision-making in stock trading.

LSTM-Based Predictive Modeling for Mutual Fund NAV Forecasting

LSTM,Pandas, NumPy, Matplotlib, scikitlearn   *Jan 2024 - Apr 2024*

- Developed and implemented a robust LSTM model for predicting Net Asset Values (NAVs) of mutual funds based on historical market data.
- Leveraged LSTM architecture to capture temporal dependencies and patterns in financial data, enabling accurate forecasts of NAVs.
- Improved decision-making in mutual fund investments by providing timely and accurate predictions of NAVs, facilitating informed investment strategies.

Online Bank interface with Python, Tkinter, and MySQL

Python, Tkinter, MySQL   *July 2023 - Aug 2023*

- Developed an interactive GUI for a simulated online bank using Python and Tkinter, integrating MySQL for backend database management to handle user account information, transactions, and interest calculations.
- Implemented key functionalities such as fund deposit/withdrawal, new account creation, loan management with interest rates, and credit card application and usage, ensuring comprehensive banking operations.
- Implemented real-time data synchronization using MySQL connectors, enabling the application to dynamically adjust rates and measures based on actual dates and times. This enhancement improved data accuracy and transaction reliability.

JIGSaw - A Novel Modular Parallelised Secure Messaging Architecture

Multiprocessing, cryptography.hazmat, ecdsa, pyaes, pbkdf2, TCP/IP sockets,Python   *Jan 2024 - Apr 2024*

- Designed and implemented a parallelized high-performance cryptographic communication system in Python, utilizing advanced cryptographic primitives from the cryptography.hazmat library and ecdsa library for elliptic curve digital signatures.
- Contributed to the reduction of processing time for cryptographic operations pipeline from 6 minutes to 17 seconds, resulting in improved efficiency for sensitive data transmission.

WORK EXPERIENCE

Research Assistant (Independent Project, Supervised)

Vellore Institute of Technology   *Jan 2024 – May 2024*

- **Advancing Cybersecurity through Deception and Adaptive Analysis**: Collaborated on novel cybersecurity measures, conducted literature reviews, designed experiments, analyzed data using Python, TensorFlow, and PyTorch, and contributed to a research paper (preprint stage).
- **Modular Parallelised Secure Messaging Architecture**: Led team in developing a secure messaging pipeline, implemented encryption algorithms using CUDA, evaluated performance and security, and documented results.
- **Additional Research**: Working on five papers covering High Performance Computing ,Computational Neuroscience, Deep learning applications, and financial data analysis. Conducting experiments, performing data analysis, and preparing manuscripts for peer-reviewed journals.

Data Analytics Extern
Google Developers and Smartbridge, Remote   *Aug 2023 - Nov 2023*

- **YOLO Weapon Detection Project**: Led the development of a highly accurate YOLO model for detecting weapons from webcam video footage, for enhancing safety. Deployed the model using Flask to create a functional web application to alert the necessary authorities.
- **Technical Proficiency**: Mastered advanced data analysis and visualization techniques using NumPy, pandas, Matplotlib, Seaborn, and TensorFlow.
- **Collaborative Teamwork**: Worked effectively with a team of three on project design, implementation, and presentation, demonstrating strong collaboration and communication skills.

Content Writer
Socrates Club, Chennai, India   *July 2023 - June 2024*

- **Research and Writing**: Authored long-term (10-12 minute reads), medium-term (5-7 minute reads), and short-term (3-4 minute reads) blogs on various philosophy topics, demonstrating strong research and analytical skills.
- **Content Creation**: Produced in-depth, well-researched content, enhancing the club's online presence and engaging the academic community.
- **Communication Skills**: Developed clear and concise writing, making complex philosophical concepts accessible to a broader audience.

PUBLICATIONS

- Siren – Advancing Cybersecurity through Deception and Adaptive Analysis   Link
- JIGSaw: A Novel Modular Parallel Encryption and Authentication Pipeline for Secure Messaging   Link

CERTIFICATIONS

Microsoft Certified: Azure AI Fundamentals   **June 2024**

Microsoft Certified: Azure Data Fundamentals   **June 2024**

Google Career Certificates: Advanced Data Analytics   **Jan 2023 - July 2023**

Google Cloud Digital Leader   **Nov 2023**

LEADERSHIP AND ENGAGEMENT

- **Tech Lecturer:** Delivered an engaging seminar on the workings and applications of CUDA to an audience of over 50 students.
- **Social Media Manager and Event Coordinator(Jan 2024-Present)** in the Startup Incubation Centre at Vellore Institute of Technology, Chennai: Strategically managed social media platforms, increasing engagement and visibility for the the Startup Incubation Centre.

EDUCATION

Vellore Institute of Technology   **Chennai, India**
Bachelor of Technology: Computer Science and Engineering   *Aug 2021 - May 2025*
GPA: 8.65/10.0