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Research Interest Knowledge Graph, Privacy, Security, Generative AI, Cloud Computing, Software Engineering, Microservices, Transformer models

Current Research

GraphRagLLM: Knowledge Representation and Q&A Framework for S&P Companies A knowledge graph-based framework infused with LLM to provide any user with an inference to ask questions and receive a formatted answer related to company-specific privacy policies.

CyberGraphLLM: A Comprehensive framework of generating insightful analysis from Cybersecurity guidelines available on the internet We are working on developing a unified knowledge graph from guidelines like CWE, CVE, CPEAC, NVD. The objective is to implement graph mining techniques to provide users with generalised insights from the guidelines.

PROJECTS

GraphDPR: A Privacy Policy Analysis Framework Using Knowledge Graphs and Topic Modeling: Developed a graph-based framework for analysing privacy policies of leading e-commerce companies in the USA, such as Walmart, Publix, Instacart, using Neo4j and sentence transformers to model personal data flow between entities. The system extracted and classified semantic relationships across data types, collection methods, and third-party sharing practices through NLP techniques and topic modeling. This project demonstrates the application of graph theory in legal document analysis and has been accepted for publication in ASONAM 2025.

Combining Channel-Spatial Attention Gates with A Connected U-Net Framework for High-Precision Breast Cancer Segmentation: Developed a high-precision breast cancer segmentation model for ultrasound imaging using a Connected U-Net architecture combined with channel-spatial attention gates and dual decoders. Applied data preprocessing, augmentation, and hybrid loss optimization to improve tumor delineation and minimize false positives. Achieved robust performance (94.82 validation accuracy, 89.43 precision) on the BUSI dataset. A fine-tuned model for real-time clinical applications.

Cashless Ride-Sharing Platform-Obhai: Developed and deployed a cashless, end-to-end digital transaction-enabled ride-sharing service, integrating digital payment gateways (Visa, Master, Amex, Mobile wallets) and automated workflows for rider payments and refunds. Leveraged AWS cloud server infrastructure and load balancing solutions to support high user concurrency, while implementing REST API-based architecture for secure transaction processing. Ensured seamless financial operations and real-time payouts to riders, demonstrating expertise in digital

payments, cloud technologies, and financial automation for large-scale mobility platforms

Dynamic Taxi Fare Prediction: Led the development and deployment of a machine learning-powered dynamic fare prediction system for a ride-sharing platform, utlizing a curated dataset of 10 million data points with geo-location, customer behavior, and payment mode features. Conducted comprehensive model training and comparison using algorithms such as Random Forest, Gradient Boosting, and Logistics Regression. The Random Forest Classifier achieved the highest precision (0.87) validated via 6-fold cross-validation. Successfully deployed the ML model using Amazon SageMaker, utilizing its scalable infrastructure to provide a real-time fare prediction service. This service currently supports over 100,000 daily users, and improved daily ride count by 13 percent back in 2023, demonstrating expertise in large-scale data processing, predictive modeling, cloud deployment, and AI-driven transportation solutions.

EXPERIENCE

Engineering Manager *MGH Logistics Ltd. MGH Group* Jan 2023 - December 2023

- Engineered tailored adaptation and integration of Infor Nexus for MGH freight forwarding, catering to unique business workflows.
- Established technical partnerships with Levi's, Carrefour, and Inditex, implementing robust Electronic Data Transfer systems to streamline and automate communications among buyers, shippers, and suppliers.

Senior Software Engineer *OBHAI Solutions Limited* Jan 2021 - Dec 2022

- Led the system scaling of OBHAI, the leading ride-hailing platform in the country, to provide daily services to one million customers.
- Introduced a cashless payment system within the application, enabling customers to make direct payments from their digital wallets and ensuring immediate distribution of earnings to riders' digital accounts.
- Supervised incorporating a machine learning-powered fare engine into the platform, which led to a rise in the number of rides by 13 percent.

Software Engineer *OBHAI Solutions Limited* April 2019 - Dec 2020

- Implemented a supply-demand driver dynamic fare engine for the ride-sharing platform.
- Developed Financial Administrative modules such as Ride Payment Disbursement, Rider Payable Calculation and BI reports to monitor and maintain the cash flow inside the organisation
- Designed a commission module for ride service providers and developed dynamic performance- based and schedule-based modules to meet requirements. This model is now being embraced by other ride-hailing platforms.

SKILLS

- **Languages:** JavaScript, Python, MATLAB, SQL, NoSQL, Java
- **Frameworks/Tools:** Express.js, Next.js, FastAPI, Docker, Git, Jenkins

- **Libraries:** jQuery, NumPy, SciPy, Pandas, Scikit-Learn, Matplotlib, Keras, Tensorflow, PyTorch
- **Paradigms:** Algorithms, System Design, CI/CD, Code Versioning, Data Visualisation, Data Modelling, ML/AI Model Training, Database Design, Cloud Server Management
- **Problem-Solving:** Solved about 60 problems on online judges.

EDUCATION

Master of Science, Computer Science — Jan 2025 - Current
Georgia Southern University
Course Completed: Algorithm Analysis and Data Structures, Data Science and Machine Learning
CGPA: 4.00/4.00 (Ongoing)

Bachelor of Science, Computer Science and Engineering — Sep 2014 - Mar 2019
BRAC University
CGPA: 3.26/4.00 (Major CGPA: 3.50)