KALP THAKKAR

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EDUCATION

University of Central Florida, FL, USA Aug 2023 - May 2025 (Expected)
Masters of Science in Computer Science **(GPA: 4/4)**

LDRP Institute of Technology and Research, Gujarat, India July 2019 - May 2023
Bachelor of Engineering in Computer Engineering **(GPA: 8.87/10)**

TECHNICAL SKILLS

- Programming Languages: Python, Java, C, C++, JavaScript, SQL
- Database and Querying Tools: MySQL, MS SQL Server, PostgreSQL, Firestore, MongoDB, SSMS, MySQL Workbench, and pgAdmin
- AI/DS Frameworks and Libraries: NumPy, Pandas, scikit-learn, PyTorch, Tensorflow, Keras, SpaCy, Selenium, Matplotlib, Seaborn, Plotly, SQLAlchemy, OpenCV, Dataiku, OpenAI, NLTK, LLM, Apache Spark, Kafka, Dask, PyOD, Data Visualization: PowerBI, Tableau
- Cloud/ Version Control: Firebase, Amazon Web Services (EC2, S3, Lambda) AWS, Google Cloud, DevOps, Git, Heroku
- Operating System: Linux OS, Windows OS, Other: Data Structure & Algorithms, Artificial Intelligence, Data Science, Natural Language Processing, Docker, Kubernetes, Bash, PowerShell, CI/CD, VBA, ETL, Microsoft Office, Excel, IoT, Machine Learning

PROJECT EXPERIENCE

SmartCrew: Integrated Crew Resource Management System (Python, SQL, MySQL Workbench, PostgreSQL, Excel VBA, Power BI, AWS, TensorFlow, scikit-learn, Apache Spark, Docker, Kubernetes, Git, CI/CD, Machine Learning, Data Visualization)

- Developed a scheduling system using Python and SQL, reducing manual scheduling time by 12 minutes per session and enhancing crew utilization by 26%. Implemented ETL processes to ensure real-time updates and forecasting, minimizing conflicts.
- Analyzed over 3 million entries from maintenance logs utilizing cutting-edge ML models and SQL databases, leading to predictive insights on equipment failures decreasing unexpected downtimes by 41%, resulting in significant operational efficiency gains.
- Designed an interactive dashboard using Excel VBA and Power BI to track crew performance metrics in real-time, empowering managers to make decisions, resulting in a 20% reduction in operational delays and a 15% increase in crew productivity.

AURA - IoT control with Brainwave (C++, Python, Machine Learning, Internet of Things, Electroencephalography in Neuroscience)

- Engineered an EEG-based control system, enabling users to interact with IoT devices through brainwave signals using a modified AD8232 module and a 3-electrode placement method (Fp1, Fpz, Fp2), achieving 95% accuracy
- Improved response time for IoT device by 5110 ms through optimized data processing in ESP32 MCU and efficient HTTP network

SANTOS - Smart Autonomous Navigation and Traffic Optimization System (TensorFlow, PyTorch, GANs, CNNs, RNNs, Q-Learning, DQN, Cameras, LiDAR, Radar, Kalman Filtering, Sensor Fusion Algorithms, SUMO, Python, C++, OpenCV, scikit-learn, NumPy)

- Harnessed the potential of a GAN-based model to generate realistic driving scenarios, enhancing model robustness with diverse training data, validated through human evaluation and performance metrics
- Established a robust environment mapping strategy using cameras, LiDAR, and advanced filtering techniques, leading to a 50% increase in successful navigation attempts during challenging conditions such as heavy rain and snow.
- Created an AI system with TensorFlow and SUMO, dynamically adjusting traffic signals using real-time data, reducing average travel time by 18% through reinforcement learning

RESEARCH AND TEACHING EXPERIENCE

Graduate Research Assistant (GRA) - Urban Digital Twin (Dr. Soheil Sabri)**,** University of Central Florida Aug 2024 - Present

- Conducting IoT data analysis, cloud integration, and A.I. implementation for informed decision-making while employing 3D visualization to model real-world entities in digital space, fostering enhanced understanding and decision support
- Leading D101 deliverables in the OGC UDTIP pilot project by developing solutions for urban traffic noise modeling and obstacle detection, leveraging AI, sensor data, and standards like GeoPose and TrainDML to enhance interoperability

Graduate Teaching Assistant (GTA) (CAP 6640 NLP, CIS 5730 Blockchain)**,** University of Central Florida Jan 2024 - Aug 2024

- Facilitated discussions, assisted students with LLM & transformer model projects, and contributed to emerging NLP research trends

WORK EXPERIENCE

Software Engineer Intern, Vrunda Computing, India Dec 2020 - Apr 2022

- Built deep learning models, enhancing UX in a multi-role application by 38% through improved automation and personalization
- Implemented advanced recommendation systems powered by deep neural networks, boosting hyper-personalized user interactions with travel agents by 25%, and NLP techniques improving user-agent communication efficiency, serving 1M+ users

ACHIEVEMENTS & LEADERSHIP

- Awarded $850 scholarship as one of 20 selected globally to attend IEEE AISS on Human-Centric AI Autonomy, Melbourne, Australia
- Grew a tech YouTube channel to 75K+ subscribers by delivering 60+ quality videos to facilitate learning through edutainment
- Winner of Insight coding Techfest amongst more than 600 participants at LD College of Engineering - India's 20th ranked college
- Awarded 'Student of the Year' for exceptional academic and extracurricular performance for 4 years among 500 students