

RUTHWIK DOVALA

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EDUCATION

University of North Carolina at Charlotte
Master of Science | Computer Science

Charlotte, NC | 2024-26

PROFESSIONAL EXPERIENCE

System Administrator (Intern) | 01/2024 -05/2024
Tiny Scholars High School

- Implemented management tools for virtual server environments and oversaw file system/storage upgrades, ensuring data integrity and redundancy.
- Provides technical direction to team of 20 technicians providing technical guidance in diagnostics, troubleshooting, installation, servicing, and acceptance testing.
- Coordinated seamless software system installations for 600+ users, managing user accounts, data conversions, and password resets.
- Delivered training, ongoing support, and expert troubleshooting to users, promoting efficient system operation and best practices.

Volunteer | 04/2023 -11/2023
Amma Social Welfare Association (ASWA)

- Managed and maintained organizational records, ensuring accurate entry of beneficiary, donor, and program data into digital systems.
- Supported the coordination of welfare initiatives by organizing and updating information for education, nutrition, and blood donation programs.
- Collaborated with volunteers and staff to streamline record-keeping processes, improving data accessibility and reporting efficiency.
- Ensured confidentiality and accuracy of sensitive beneficiary information, enhancing organizational reliability and trust.

SKILLS

- DevOps:** Docker, Kubernetes, CI/CD Pipelines
- Frontend Development:** HTML, CSS, JavaScript, React, jQuery, Bootstrap, Angular
- Programming Languages:** C, C++, Java, R, Python, SQL, Ruby
- Data Visualization:** Power BI, Matplotlib, Tableau
- Cloud Technologies:** AWS (S3, EC2, EKS, SNS, DynamoDB, Redshift, SageMaker, QuickSight)
- Security & Authentication:** JWT, OAuth, API Security
- Tools:** Jupyter Notebook, Postman, Advanced Excel (VBA, Power Query), ETL Pipelines, SQL Server, Entity Framework
- CRM Systems Integration, E-commerce Development and Real-time KPI Dashboards
- Business & Process Optimization:** Requirement Gathering, Workflow Design, Process Automation, Statistical and Operational Analysis

CERTIFICATIONS

- AWS Academy Data Engineering
- Cyber-Ethics- ISEA
- Artificial Intelligence – IIT Bombay
- Internet of Things and Embedded Systems – University of California
- Google Data Analytics Professional Certificate

PROJECTS

- Data analysis crime against women in India using Machine learning techniques**
 - Analyzed crime against women in India using Python (Pandas, NumPy, Scikit-Learn) for data preprocessing, visualization, and model development.
 - Applied machine learning models including Logistic Regression, Decision Trees, Random Forest, and K-Means Clustering to identify crime hotspots and predict occurrences.
 - Derived actionable insights highlighting key crime factors and proposed data-driven interventions to enhance women's safety.
- Segmentation and Classification of Roads using satellite images**
 - Developed a deep learning model using **Convolutional Neural Networks (CNNs)** and **U-Net architecture** for segmentation and classification of roads from satellite images. Utilized Python with **TensorFlow/Keras** to preprocess data, train the model, and achieve high accuracy in identifying and differentiating road types.
- Development of Swarm of drones for surveillance (Simulation)**
 - Developed a simulation for a swarm of drones aimed at surveillance tasks. Utilized Python with frameworks like **ROS (Robot Operating System)** and **Gazebo** for simulating drone coordination and movement. Implemented algorithms for path planning, obstacle avoidance, and communication within the swarm to ensure efficient and autonomous surveillance coverage.
- A Comparative Analysis of Swarm Algorithms for Enhancing Communication in Drone Networks ([Publication](#))**
 - Conducted a comparative analysis of swarm algorithms (**PSO, ACO, ABC**) to improve communication and coordination in drone networks.
 - Evaluated each algorithm’s scalability, efficiency, and robustness under dynamic conditions, identifying the most effective and proposing hybrid enhancements.
 - Validated results through simulations and case studies, with future scope focused on integrating machine learning for adaptive swarm behavior.
- Unleashing power of Vision Transformers for disease prediction in Chest X ray images ([Publication](#))**
 - Employed a range of deep learning models including **Vision Transformers, ConvNext, DenseNet169, EfficientNetV2, InceptionNetV3, MobileNetV2**, and **NasNetMobile** for lung disease prediction from chest X-rays.
 - Utilized Python with **TensorFlow** and **PyTorch** to enhance diagnostic accuracy, with a focus on pneumonia and COVID-19 detection.
 - Integrated state-of-the-art techniques to optimize chest X-ray analysis, contributing to improved **AI-driven healthcare diagnostics**.
- A Comparative Analysis of Deep Learning Models for Detection of Diabetic Foot Ulcer using Foot Thermography Images ([Publication](#))**
 - Conducted a comparative study of deep learning models (**CNNs, RNNs, transfer learning**) for detecting diabetic foot ulcers using foot thermography.
 - Evaluated model performance using **AUC-ROC** and **F1-score**, and applied **Grad-CAM** for interpretability and transparency.
 - Aimed to develop a non-invasive, real-time diagnostic tool, with future enhancements focusing on multi-modal data integration and real-world deployment.
- A Machine Learning approach to Optimizing Resume and Job Listing Compatibility**
 - Developed a machine learning-based system to automate resume-job matching, improving recruitment efficiency and reducing bias in hiring decisions.
 - Utilized text analysis techniques and supervised learning (**TF-IDF, Naive Bayes**) to extract skills from resumes and job descriptions, optimizing the matching process.
 - Achieved scalable, modular architecture with a flexible preprocessing pipeline, enhancing job matching accuracy and candidate discovery.