Nicholas Hirt

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Projects

Sudoku Solver with Artificial Neural Network

- Using deep learning techniques, developed an Artificial Neural Network (ANN) model to solve Sudoku puzzles using Keras.
- Trained the ANN model on a large dataset of Sudoku puzzles to learn patterns and strategies for solving puzzles efficiently.
- Evaluated the ANN model's performance using various metrics and achieved a high accuracy rate of 97% in solving Sudoku puzzles.
- Conducted thorough experimentation and analysis to optimize the ANN model's hyperparameters, architecture, and training process for optimal performance.
- Led team of fellow students, actively participating in team meetings, code reviews, and sharing ideas for model improvement.
- Presented the project and its results to faculty members and peers, demonstrating practical communication skills and the ability to convey technical concepts to non-technical audiences.

GAN Tabular Data Synthesis

- Developed a GAN (Generative adversarial network) utilizing Keras, including both generator and discriminator models
- Appropriately processed real-world datasets through techniques such as data imputation and feature scaling to be used in machine-learning techniques.
- Customized module architecture to tune the performance of GAN changing model parameters and hyperparameters to enhance quality
- Employed similarity measures, distribution comparisons, tests on trained ML models, and statistical tests to evaluate synthetic data validity

Azure SQL Database for Fictitious Airport Management

- Implemented an Azure SQL database for a fictitious airport management system as part of the Introduction to Database Systems course.
- Developed a comprehensive database schema to manage passenger data, aircraft information, employee records, and pilot qualifications for efficient airport management.
- Utilized entity-relationship modeling techniques to establish clear relationships between various entities, ensuring optimal data organization and retrieval.
- Deployed the database on Azure SQL Database service for seamless scalability and reliability, leveraging cloud infrastructure for efficient management.
- Prepared comprehensive documentation detailing database schema, data dictionaries, and system architecture, facilitating ease of understanding and future maintenance.

Education

UNBC - Bachelor of Science in Computer Science (2024)

Skills

Software Languages/Frameworks - Python | Java | Javascript | C# | HTML | CSS | Django
Operating Systems - Windows | Linux
Database - MySQL
Project Management Tools - GIT
Containerization: Docker
Networking: TCP/IP | DNS | HTTP
Cloud Computing: AWS