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MS-CISBA Capstone CIDM 6395

Synthesis Paper

Introduction

The Master of Science in Computer Information Systems and Business Analytics (MSCISBA) program at West Texas A&M University is designed to equip students with the expertise to tackle complex problems in the field of information systems and analytics. The program is structured around four fundamental curricular areas: Software Systems (SS), Business Analytics (BA), Data Management (DM), and Cybersecurity and Networking (CN). Each area represents a core component of the technology industry, and my projects during the MSCIS program have served as practical applications of these educational pillars.

Software Systems (SS)

The foundational qualities of the Software Systems area include understanding software development methodologies, programming, system architecture, and the application lifecycle. My capstone project, the Online Shopper Intention Predictor App, exemplifies the application of these principles. Developed using Python and Streamlit, this app incorporates logistic regression, decision trees, and LightGBM to predict online shopping behaviors based on user interaction data. This project not only demonstrates software development skills but also an understanding of applying machine learning models in practical, user-oriented applications.

Additionally, my development of a Financial Fraud Detection Web Application showcases my ability to integrate software systems knowledge into building responsive web applications. This project involved using HTML, CSS, JavaScript, and server-side scripting to create a web interface that helps users assess potential financial fraud, reflecting my competency in both front-end and back-end development.

Business Analytics (BA)

For this area, the core qualities are rooted in analytical proficiency and decision-making effectiveness which are crucial in contemporary business environments. My curriculum included courses like "Quantitative Analysis of Business" and "Seminar in Data Analytics," which equipped me with vital analytical skills such as linear programming, statistical analysis, predictive modeling, logistic regression, and the use of advanced machine learning tools like RapidMiner.

In the "Quantitative Analysis of Business," I developed a keen aptitude for statistical and predictive modeling, using techniques like logistic and linear regression. These skills were instrumental in my Online Shopper Intention Predictor App, where I applied logistic regression to predict the likelihood of customers completing a purchase, thereby enhancing business strategies through data-driven insights.

Additionally, my participation in the CFA Research Challenge as part of a 4-member team allowed me to apply these analytical skills in a real-world scenario. Analyzing a publicly traded company, we employed diverse financial modeling techniques like Monte Carlo simulation and Sensitivity Analysis to forecast financial performance and craft a 21-page investment report. This experience not only showcased my ability to synthesize and apply BA skills but also highlighted the practical utility of my MSCIS training in a competitive finance setting. The opportunity to engage in this challenge through the College of Business was made possible by the comprehensive analytical training provided by my MSCIS program, highlighting the interconnection between academic preparation and practical application in real-world business analytics.

Data Management (DM)

In Data Management (DM), efficient organization, storage, and retrieval of data are a necessity. My MSCIS program allowed me to deepen my understanding and skills in this area through significant projects.

A notable project was the Data Mining Project on Bank Marketing, aimed at predicting the success of bank telemarketing campaigns using a dataset from the UCI Machine Learning Repository. This project involved comprehensive data cleaning and preparation using

RapidMiner, R, and Python, emphasizing the importance of data integrity for effective predictive modeling.

Additionally, my Database Project involved designing and implementing a database system for a tech startup. This project, detailed in the provided project report and SQL scripts, focused on creating a database schema that supports essential business functions, ensuring scalability and efficient data handling. This practical experience underscored the critical role of structured data management in enhancing business operations and decision-making.

Cybersecurity and Networking (CN)

The Cybersecurity and Networking area emphasizes safeguarding digital systems, networks, and data from various cyber threats, ensuring data integrity, and maintaining confidentiality. My engagement with this curricular area is well-documented through multiple projects that highlight my practical skills and theoretical understanding. Some examples are my reports on the use of tools like Recuva and CCleaner for effective data management and protection, as well as my explorations of network vulnerabilities using ShieldsUp and HaveIBeenPwned. These reports underscore my ability to assess and enhance the security setting of digital environments.

Additionally, the development and implementation of an Audit Plan for the San Diego Biomedical Research Center and a comprehensive Contingency Plan provided hands-on experience in setting up systematic processes to safeguard information security and ensure business continuity. These projects collectively demonstrate my ability to design and implement security measures that are crucial for protecting data integrity and confidentiality across various technological contexts.

Conclusion

The synthesis of foundational topics in the MSCIS program through my diverse range of projects demonstrates not only my ability to apply educational concepts in real-world scenarios but also my comprehensive understanding of the interplay between different areas of computer information systems. Whether it’s developing software, analyzing business data, managing databases, or securing networks, my academic and project work throughout the MSCIS program has prepared me to tackle complex challenges in the technology field, making a significant impact on my professional capabilities.