MARC MAILLOUX

Data Analyst | Modeling and Simulation Engineer

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It is because of my desire to achieve senior-level knowledge of data science, machine learning, and modeling and simulation, and my dedication to contribute to the greater good of society that I initially became interested in your company. I believe am the most primed candidate for the position based on the following overview of qualifications:

Data Analysis and Visualization

Skills | *Human processing and cognition* | *User interface* | *Clear data representation*

- Applying data visualization on a cross-disciplinary level, I analyzed rental property data through graphic representations of properties based on variables like rent, income, and monthly mortgage payments. I then presented my findings to real estate investors, giving them the tools and knowledge to effectively leverage their own data for their investment portfolios. In a separate project, I analyzed a credit union loan application dataset to classify factors contributing to loan approval rates. In the future, I would like to present these projects as a package to help potential investors gain an in-depth perspective of their current portfolio and projected goals.

Hardware Prototyping for M&S Research

Skills | *3D modeling* | *3D printing* | *Printed circuit board design* | *Google search* | *Visual thinker* | *Electronic circuitry & breadboard*

- In an effort to increase the accessibility of homegrown greenery and fresh vegetables, I am developing an intelligent system prototype that collects temperature, humidity, and light data. The device utilizes the ESP32-Wroom-32 on a custom designed PCB, enclosed with a 3D printed case and powered by a solar-powered lipo battery. Using Node-Red, the dataset links to Weather Underground, gathering rain chances as another predictor.
- Using a Raspberry Pi, I am creating a home security system that leverages object detection and classification. The device will detect people at the front door and assign them a classifier, resident or guest (mailman, delivery courier, etc.), using a custom dataset. An Intel Movidius Neural Compute Stick will eliminate low frame rates for classification in real time. Using deep neural networks, the system will utilize a small dataset with high accuracy.

Data-Driven Research and Peer Collaboration

Skills | *Exploratory approach to data analysis* | *Hypothesis testing* | *System modeling* | *Collaborative mentality*

- Through graduate-level research opportunities, I embarked on two data-driven research projects, resulting in an exploratory paper “Artificial Intelligence: The New Electricity” under revision for publication, and an intelligent data-collecting system prototype using a Raspberry Pi, ESP32-Wroom-32, and Node-Red.
- As part of a team researching drone air delivery systems, we used discrete methods to simulate a package delivery system, determining the average delivery-time based on varied inputs like package size and delivery location, and comparing those results to the current driver-based delivery methods.

Machine Learning Techniques and Computer Programming

Skills | *Classification and prediction algorithms* | *Computer vision* | *Natural language processing* | *Data mining*

- Using N-Gram word embeddings to classify corpus sentiments, I performed data processing and a 10-fold cross validation to obtain comparison data against eight other experiments. I calculated N from 1 to 5, then performed a concatenation of the N-grams (for example: uni-gram and bi-gram, then uni-gram bi-gram tri-gram, and so on).
- As part of a team classifying cyberbullying offenses, I labeled over 8,500 twitter texts into three categories (cultural bullying, sexual bullying, and personal bullying), then successfully tokenized and embedded the corpus for classification, using several classification methods for comparison. In the future, I would like to use a Raspberry Pi to create a live demonstration of our model, testing its technological accessibility.

Thank you for taking the time to consider my application. If you would like to inquire about my qualifications or schedule a time to meet, my contact information is located on the top right corner of my application materials. I look forward to learning more about your company mission, team environment, and how we can work together on future pursuits.

Sincerely,
Marc E. Mailloux