Devin Setiawan

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Education

University of Kansas   **May, 2024**
Bachelor of Science, Computer Science
- GPA: 3.94
- Course Taken: Intro to AI, Intro to ML, Embedded ML, Applied Statistics, Engineering of Learning Algorithms

Research Interest

- Interpretable Machine Learning
- Individualized Machine Learning
- Machine Learning in Medical Diagnostics Applications
- General Applied Machine Learning

Research Experience

Brain, Behavior, Quantitative Department - Dr. Arian Ashourvan   **June 2023 – Present**
Undergraduate Researcher - Computational Neurocognition Lab   *Lawrence, KS*
- Developed interpretable scorecard model for early onset Alzheimer disease prediction with AUC comparable to complex MRI models, by using FasterRisk algorithm to find sparse linear additive model
- Led an ongoing research in inducing personalization capability to traditional machine learning model in disease classification, leading to a novel personalized framework that increased classification performance
- Cleaned and processed data from Alzheimer's Disease Neuroimaging Initiative, an ongoing longitudinal study from 2004, using Excel and Pandas dataframe that resulted in access to clean data across multiple research team

Analytical Chemistry Department - Dr. Rebecca Whelan   **June 2023 – Aug 2023**
Research Assistant - Whelan Research Group   *Lawrence, KS*
- Implemented fast string based classification algorithm, motif analysis, and molecular docking simulation that led to discovery of 9 new aptamer candidates used in the detection of ovarian cancer
- Led a feasibility study on in-silico DNA aptamer selection using complexity analysis of current research-grade machine learning software, leading to the initiation of a new research study in computational drug discovery
- Cleaned and processed DNA sequencing data from a sequencer using Python that resulted in a streamlined data pipeline for DNA aptamer selection, improving data accessibility to the research team

Related Work

Individualized Machine-learning-based Clinical Assessment Recommendation System (iCARE)
Independent Research
- Undergraduate Research Awards 2024
- Undergraduate Research Symposium Outstanding Presentation Award

The Cognitive, Age, Functioning, and APOE4 (CAFE) Scorecard to Predict the Development of Alzheimer's Disease: A White-Box Approach
Independent Research
- Research was presented in International Neuropsychological Society (INS) conference

TinyML Arithmetic (Arithmetic Operations Using CNN on Edge Devices)

Embedded ML Project

- Generated datasets for digits and arithmetic operators using the MNIST dataset from TensorFlow and generated an operator dataset by capturing handwritten arithmetic operators resulting in a comprehensive dataset combining digits and operators, enabling robust model training
- Preprocessed the MNIST and operator datasets to create a unified dataset suitable for training using OpenCV (cv2) for image processing, scaled and inverted the images, and stitched them into 28x84 arrays resulted in a well-prepared dataset that facilitated high model accuracy, with training results showing promising accuracy between 86-94%
- Deployed the trained model on a user-friendly platform using Streamlit to showcase its functionality, creating a three-page structure with real-time camera input, image capture for inference, and a display of sample test data with inference values. I utilized the streamlit-camera-input-live library for live camera implementation, resulting in an easy-to-use platform for others to use

ML Sandbox (Web Application for Automated Machine Learning Training and Deployment)

Software Engineering II Project

- Designed an appropriate tech stack and architecture using Streamlit for the front end, FastAPI for the backend, and an SQL database for data storage, as well as implementing authentication using JWT, resulting in the successful deployment of a scalable and secure architecture that supports seamless machine learning workflows
- Built the "Autodidact" page, which allows users to upload their training files and set their ml training preferences through the website, enabling users to initiate and manage their machine learning training with minimal effort, resulting in a user-friendly interface that streamlined the machine learning training process
- Developed a feature allowing users to upload pre-trained models, rate other users' models, and download models from others, fostering a community of machine learning practitioners who could easily share and benefit from each other's work, enhancing the collaborative potential of the application.

Jayhawk Aero Design

Data Science and Intelligence Team Member

- Built and managed a website for Jayhawk Aero Design that consist of analysis tools for optimization and data science team using Streamlit and Plotly, resulting in sensitivity analysis capability for AIAA rc plane competition

Skills

- Python: Pytorch, Tensorflow, Scikit-learn, Pandas, Matplotlib, Plotly, Seaborn
- HTML, CSS, JS, Streamlit, SvelteKit, FastAPI, SQL, AWS