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LUCHAO QI

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EXPERIENCE

Ekohealth Oakland, CA
Data Scientist Intern 09/2020 – 01/2021
Responsible for building the prototype of an audio-based dialysis fistula assessment algorithm for an FDA-cleared digital stethoscope, from ideation to launch, saving ~$900 monthly cost for hemodialysis patients. Worked closely with the clinical team to extract insights from data and provided AI-powered analysis to boost clinical workflow.

- Oversaw clinical data collections with AWS S3 buckets for data quality and ETL (extract, transform, load).
- Coordinated cross-function teams of 5 engineers and 3 doctors to design machine learning algorithms detecting vascular stenosis in fistula with 73.68% accuracy.
- Productionalized customer-facing analysis pipeline in Python using AWS (S3, EC2, SageMaker); optimized SQL server performance by 13% to query clinical data.
- Delivered regulatory submissions for FDA approval product and successfully secured $295,881 in SBIR funding from the National Institutes of Health.

The Johns Hopkins Data Science Lab Baltimore, MD
Research Assistant 08/2019 – 05/2020
Headed time series analysis for wearable activity data (NHANES). Investigated associations between BMI, mortality, and physical activity using statistical methods. Discovered statistically significant predictors improving physical fitness.

- Extracted 100K+ time-series SAS data from CDC in R and manipulated data using dplyr and tidyverse.
- Designed CNN-based neural network using Keras for BMI regression with 25.45 mean squared error (MSE).
- Reduced data dimensionality using principal component analysis (PCA); improved prediction by 23% training a generalized linear model (GLM).
- Hosted R Shiny website performing cluster analysis with K-Means and PCA.

EDUCATION

Johns Hopkins University 05/2020
Biomedical Engineering - Data Science, M.S.E., GPA: 3.6. Baltimore, MD

Northeastern University 05/2018
Biomedical Engineering, B.S., GPA: 3.8. Liaoning, CN

PROJECTS

Reinforcement Learning: OpenAI Gym 02/2020 – 05/2020
AI that Learns to Play Super Mario Bros Using Deep Q-Network (DQN).
Demo: https://github.com/LuchaoQi/Reinforcement_Learning
Developed DQN-based convolutional neural network (CNN) model as an AI agent using TensorFlow and accelerated neural network training parallelly by 30% using JAX. Achieved 2X faster than average of human players with the trained agent completing tasks successfully.

Natural Language Processing: Amazon Reviews 09/2019 – 12/2019
Use of Machine Learning to Detect Fake or Abusive Amazon Fine Food Reviews.
Demo: https://www.kaggle.com/luchaoqi/amazon-review-rating-prediction
Performed data wrangling on Amazon Fine Food Reviews. Tokenized textual data using NLTK and vectorized text using bag-of-words models with scikit-learn. Achieved 94% accuracy detecting fake ratings using logistic regression; improved algorithm performance by 3% using random forest.

SKILLS

Programming Languages: Python, R (R Shiny), C++ (Basic), SQL, HTML, JavaScript (Basic), Shell scripting.
Packages: Pandas, NumPy, SciPy, NLTK, scikit-learn, dplyr, tidyverse, Selenium, beautifulsoup4.
Machine Learning: GLM, Bayesian Methods, Random Forest, SVM, PCA, Ensemble Methods, CNN, LSTM
Frameworks & Platforms: PyTorch, TensorFlow, Keras, Hadoop, Flask, AWS, GCP, Google Analytics, Kubernetes.