Luchao Qi

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WORK EXPERIENCE

Ekohealth Oakland, CA / Remote
Data Scientist Intern 09/2020 – 12/2020

- Assisted in developing the product Eko-CORE, an FDA-cleared digital stethoscope, saving around $900 monthly cost for patients on dialysis
- Headed a project building the prototype of an audio-based dialysis fistula assessment algorithm to detect vascular stenosis in arteriovenous fistula
- Designed machine learning models (acc: 73.68%, AUC: 0.85) for stenosis detection
- Productionalized customer-facing python-based analysis pipeline using AWS cloud services (S3, EC2, SageMaker)
- Prepared regulatory submissions for FDA; helped secure $295,881 in SBIR funding from the National Institutes of Health (NIH)

The Johns Hopkins Data Science Lab Baltimore, MD
Research Assistant 08/2019 – 05/2020

- Headed a project focusing on association analysis between lifestyle patterns, physical activity, and body mass index (BMI)
- Imported SAS data into R and manipulated data using dplyr and tidyverse
- Developed convolutional neural networks (CNN) using Keras for BMI prediction 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; visualized clustering results using ggplot2 and plotly
  Demo: https://github.com/LuchaoQi/Shiny_clustering

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 a convolutional neural network (CNN) model as an agent using TensorFlow
- Accelerated model training by 20% optimizing learning rate and optimizer
- 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 Amazon Fine Food Reviews
Demo: https://www.kaggle.com/luchaoqi/amazon-review-rating-prediction

- Processed Amazon Food Review data using Pandas, NumPy, and dfply
- Tokenized unstructured text of user reviews using NLTK; converted text to vector using bag-of-words models with scikit-learn
- Predicted customer ratings using logistic regression with 0.94 AUC
- Improved negative reviews detection by 3% using random forest

SKILLS

Programming Languages

Python, R (R Shiny), SQL, Shell scripting

Data Visualization

Tableau, Matplotlib, Seaborn, ggplot2, plotly

Packages

Pandas, NumPy, SciPy, NLTK, scikit-learn, dplyr, tidyverse

Frameworks & Platforms

PyTorch, TensorFlow, Keras, Hadoop, AWS

Machine Learning & Deep Learning

GLM, Random Forest, SVM, PCA, CNN, LSTM

EDUCATION

Johns Hopkins University
Baltimore, MD 05/2020
Master of Science in Engineering
Biomedical Data Science
GPA: 3.6

Northeastern University
Liaoning, CN 05/2018
Bachelor of Science
Biomedical Engineering
GPA: 3.8