

## + 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](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](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