

TEGAN AYERS



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Data Scientist passionate about investigating creative solutions to tough problems. 4+ years of experience as a Research Engineer conceptualizing, prototyping, and testing novel algorithms and experiences, specifically related to sleep and hearing.

PROFESSIONAL EXPERIENCE

Research Engineer IV

Bose Corporation | June 2018 – Present

- Led multi-disciplinary front-end research teams for Sleep and Hear categories, investigating technical (e.g., in-ear biometric sensing, app analytics and recommender systems) and experiential concepts (e.g., sleep coaching).
- Developed state-of-the-art XGBoost model in Python for IMU-driven sleep-wake classification using 120+ nights of data. Model performed on par with competitors' models, including an LSTM network.
- Created TCN models in Python to measure blood pressure from PPG sensor features using an open-source dataset. Models performed within accuracy limits specified by ISO 81060 standards.
- Designed several MATLAB tools for modulating frequency and time domain audio parameters, enabling real-time design and playback of audio tracks, and running audiological tests such as acceptable noise level testing.
- Implemented a Bayesian optimizer using MATLAB tools for determining optimal feedforward ANC filter parameters.
- Championed the successful creation of an Android application that enabled two large-scale (300+) Clinical Research studies. Developed requirements, managed developer, enforced timelines/budget, and coordinated with FW team.

Research Engineer Co-op

Bose Corporation | January – July 2017

- Designed and tested PPG- and EMG-driven algorithms for heart rate variability, respiration rate, stress quantification and expression detection.

Engineering Intern

ZSX Medical | May – August 2016

- Assisted with the development of a bioabsorbable medical device to aid laparoscopic vaginal cuff closure. Performed verification tests to establish design inputs. Simulated forces acting on the device. Assisted with procedure mapping and data acquisition during a cadaver study.

EDUCATION

Master of Science in Data Science

Northeastern University, Boston MA | Expected: December 2022

Master of Science in Science, Technology and Public Policy

Rochester Institute of Technology, Rochester NY | Graduated: 2018

Bachelor of Science in Biomedical Engineering

Rochester Institute of Technology, Rochester NY | Graduated: 2018

LANGUAGES


 MATLAB

 Python, SQL

 HTML, CSS

DATA SCIENCE SKILLS

 Machine Learning Methods (Regression, Classification), Time Series Signal Processing

 Deep Learning Methods (CNN), NLP, Statistical Methods, Data Visualization

PATENTS

Ayers, Tegan, et al. (2019). Sleep staging using an in-ear photoplethysmography (PPG). US Patent No. 10,827,972. Issued 10 Nov 2020.

Ayers, Tegan, et al. (2019). In-ear Electrical Potential Sensor. US Patent No. 10,575,777. Issued 3 Mar 2020.

Read, J., Ayers, T., et al. (2020). Earphones for measuring and entraining respiration. US Patent No. 10,682,491. Issued 16 Jun 2020.

Paetsch, C., Ayers, T. (2022). Correct donning of a behind-the-ear hearing assistance device using an accelerometer. US Patent No. 11,228,853. Issued 18 Jan 2022.

ADDITIONAL COURSES

Introduction to Cloud Computing on AWS for Beginners. Udemy. Feb 2022.

PYTHON LIBRARIES

PyTorch, scikit-learn, pandas, scipy, numpy, XGBoost, seaborn, Matplotlib, NLTK, Keras, Boto3

TOOLS

Git, AWS EC2 Compute & S3 Storage, Jupyter Notebooks, Qualtrics