

EDUCATION

- **Ph.D. in Electrical Engineering** Aug 2018 - Present
The University of Texas at Dallas, Richardson, TX GPA: 3.96
- **M.S. in Computer Science, Data Science emphasis** Aug 2019 - May 2021
The University of Texas at Dallas, Richardson, TX GPA: 3.96
- **B.S. in Electrical Engineering, Computer Science minor** Sept 2014 - May 2018
University of Wisconsin-Platteville, Platteville, WI GPA: 3.95

EXPERIENCE

- **Research Assistant** Aug 2018 - Present
Center for Robust Speech Systems, Richardson, TX
 - **Machine learning:** Using signal processing and machine learning methods such as source separation and spectral complexity reduction to improve music accessibility for people with cochlear implants/hearing disabilities.
 - **Android development:** Primary Android developer for CCI-MOBILE, an open-source cochlear implant research platform. Also worked with leading cochlear implant manufacturer to develop their Android/C++ mobile platform.
- **Undergraduate Researcher** Sept 2016 - May 2018
Pioneer Speech Signal Processing Lab, Platteville, WI
 - **Machine learning:** Worked on team and individual research projects related to machine learning and signal processing such as developing a music transcriber and speech-based gender classifier in MATLAB.

PROJECTS

- **Realtime Twitter analyzer:** Twitter sentiment was analyzed using a Spark streaming application and Kafka broker. Sentiment was classified using the Stanford NLP pipeline in Scala and results were visualized in Kibana.
- **Musical source separation:** Used the MUSDB18 dataset to train a recurrent neural network and multilayer perceptron to perform musical source separation with Keras/TensorFlow. Evaluated both models using the BSS Eval Toolbox.
- **Billboard Hot 100 classifier:** Used the Million Songs Dataset with Spotify API features to predict Billboard Hot 100 songs. Compared performance of kNN, SVM, and logistic regression classifiers using cross-validation with scikit-learn.
- **Musical instrument classifier:** Used spectral features to classify music as one of 11 instrument classes. Compared performance of several machine learning methods using grid search and cross-validation with scikit-learn.

PUBLICATIONS

- **A. Brueggeman, J. H. L. Hansen (2020).** Effect of spectral complexity reduction and number of instruments on musical enjoyment with cochlear implants. Proc. Interspeech 2020, 4636-4640, DOI: 10.21437/Interspeech.2020-3034.
- **A. Brueggeman, H. Ali, and J. H. L. Hansen (2019).** CCI-MOBILE: Open-source app development for real-time cochlear implant parameter adjustment using the CCI-MOBILE research platform. Presentation abstract in 2019 Conference on Implantable Auditory Prostheses: <http://ciaphome.org/CIAP2019ProgramBook/index.html?page=267>.
- **J. H. L. Hansen, H. Ali, J. N. Saba, M. C. R. Charan, N. Mamun, R. Ghosh, and A. Brueggeman (2019).** CCI-MOBILE: Design and evaluation of a cochlear implant and hearing aid research platform for speech scientists and engineers. IEEE-EMBS International Conference on Biomedical and Health Informatics 2019.

RELEVANT COURSEWORK

- Big Data Management and Analytics, Statistical Methods for Data Science, Database Design, Machine Learning

AWARDS

- **National Science Foundation Graduate Research Fellowship (2018-Present):** Five-year national fellowship.
- **UT Dallas Eugene McDermott Graduate Fellowship (2018-Present):** Four-year fellowship.
- **UW-Platteville Chancellor Scholarship (2014-2018):** Full-tuition scholarship.

TECHNOLOGY SUMMARY

- **Languages:** Java, C++, Python, Scala, SQL, MATLAB, R **Tools:** AWS, Spark, Hadoop, Android Studio