Matthew C. Baron

US Citizen

Contact Information

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Education

Carnegie Mellon University, Pittsburgh, PA USA

M.S. Electrical and Computer Engineering, (GPA 3.7/4.0) — August 2018

B.S. w/ Honors Electrical and Computer Engineering, (GPA 3.5/4.0) — May 2014

Double Major: Hispanic Studies

Work Experience

Pison, Boston, MA

Machine Learning Engineering Lead — February 2020 - August 2020

- Designed and supervised experiments for CNN gesture recognition, improving feature selection, training approaches, and classification topologies
- Developed trained model deployment scheme reducing accuracy penalty of cross-subject model re-use
- Productionized new ML based electromyogram (EMG) gesture classification algorithm for mobile devices to meet tight contract specifications
- Set individual and team technical direction for four member ML team to promote research and development at a pace for successful contract delivery

Sonos, Boston, MA

Signal Processing Research Engineer — February 2019 - December 2019

- Investigated room impulse response simulation for voice recognition data augmentation
- Contributed to design and testing of CNN based noise classification for embedded device
- Prototyped transducer array technologies for internal and cross-functional demonstration

Bose Automotive Systems, Framingham, MA

Applied Research Engineer — January 2017 - December 2018

- Developed psycho-acoustic models for non-linear optimization of array filters
- Advanced frequency domain filter design for multi-channel cross-talk cancellation

Acoustic Systems Engineer I, II — July 2014 - December 2016

- Constructed non-linear algorithms for audio spatialization
- Prototyped car headrest transducer arrays enabling individual listening environments
- Generated tuning techniques for low transducer count automotive audio systems

Academic Projects

Master's Research, Conv Networks for Graph Signal Processing — Summer 2018

- Extended CNN to graph signals in high-dimensional data sets
  Advisor: Dr. José M.F. Moura

Term Project, Image Style Transfer for Portraits — Fall 2017 - Spring 2018

- Improved quality of image style transfer results for portraits using various transform approximations and CNN filter methods in a multi-scale approach

Term Project, Cinematic Video Stabilization — Fall 2017

- Implemented novel method for video stabilization using a sparse optimization over inter-frame differences to remove unwanted frame motion

Patents and Papers

C. Oswald, **M. Baron**, D. Tengleson, B. Subat "Vehicle Headrests" *Acoustic sub-assemblies of directional arrays for automotive audio systems implementing isolated listening zones*. U.S. No. 9706291. Jul. 2017.

Matthew Baron, "Topology and Prediction Focused Research on Graph Convolutional Neural Networks" *ArXiv e-prints*, arXiv:1808.07769 [stat.ML], 2018.

Skills

Language: Technical Report Writing (LaTeX), Fluent Spanish
Technical: Julia, Python (pytorch, Flux, TensorFlow, XGBoost), MATLAB, C/C++

Affiliations

IEEE Signal Processing Society - Member — 2014 - Present
Boston Athletic Association - Racing Team — 2018 - Present