Darius Pétermann

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Researcher in the field of applied machine learning and signal processing for audio

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1. Education

PhD Student in Intelligent Systems Engineering Jan. 2021 - Present

- Luddy School of Informatics, Computing, and Engineering - Indiana University Bloomington, IN
- Research Group: Signals and AI Group in Engineering (SAIGE)
- Advised by Prof. Minje Kim

M.Sc. in Information and Communication Engineering - GPA: 9.48/10.0 Sept. 2020

- Dept. of Information and Communication Technologies - Universitat Pompeu-Fabra, Spain
- Courses: Music Information Retrieval, System Design, Audio Signal Processing, ML for Audio, Research Methods, Reinforcement Learning
- Thesis: "SATB Voice Segregation for Monaural Recordings", Advised by Pritish Chandna

BM in Electronic Production & Design - GPA: 3.79/4.0 May. 2016

- Electronic Production & Design Dept. - Berklee College of Music
- Courses: Digital Signal Processing, Physical Computing, Audio Programming in C, Principles of Audio Electronics, Music Acoustics, Logic & Programming
- Thesis: "A Deep Look at Spectral Synthesis Techniques Through csConvolve", Advised by Dr. Richard Boulanger

2. Positions Held

Technical Lab Assistant, Massachusetts Institute of Technology Oct. 2020 - Present

- Contractor for Senseable Intelligence Group, McGovern Institute for Brain Research
- Assisting in the research and development of new machine learning and signal processing technologies targeting speech and clinical applications

Content Engineer - Audio/Music Apps, Apple Inc. Jun. 2016 - Jul. 2019

- Software engineer for Apple's pro Audio/Music Apps
- Designed real-time MIDI processing systems in C++

Programming Tutor, Berklee College of Music Sep. 2015 - May 2016

- Electronic Production & Design Dept.
- Tutored and mentored EPD students for technical classes: "Audio Programming in C", "Digital Signal Processing", "Csound", "Max/MSP"

3. Publications

Darius Petermann, Pritish Chandna, Helena Cuesta, Jordi Bonada, and Emilia Gomez, "Deep learning based source separation applied to choir ensembles" in Proceedings of the 21st International Society for Music Information Retrieval Conference (ISMIR), Montréal, Canada, 2020, pp. 733–739

- Code repository
- Experiment results page

4. Honors & Awards

"Excellent" Grade with Honor, Music Cognition & Perception, UPF Sep 2020

Magna Cum Laude Honor, Berklee College of Music May 2016

Dean's List, Berklee College of Music May 2013 - May 2016

- Appeared on Berklee Dean's List for 7 semesters out of 8

BT Production Award & Scholarship, Berklee College of Music Apr. 2015

- Award and scholarship from the Electronic Production & Design Dept.

5. Certifications

Machine Learning, Stanford - Coursera Jul. 2019 - Oct. 2019

Audio Signal Processing for Music Applications, UPF - Coursera Apr. 2018 - Jul. 2018

6. Skills

Deep Learning (over 2 years of experience):

- Tensorflow, PyTorch
- auto-encoders (audio source separation), RNN/LSTM (time-series prediction), CNN (audio/music information retrieval)

Machine Learning (over 3 years of experience):

- scikit-learn, Weka, Panda, NumPy
- regression, classification, clustering
- data mining, feature analysis and selection

Audio Signal Processing (over 5 years of experience):

- JUCE, MATLAB, Csound
- audio coding and audio quality assessment
- high and low level audio feature extraction
- real-time audio synthesis

7. Referees

- **Dr. Xavier Serra**, Director of the Music Technology Group at Universitat Pompeu-Fabra, Professor in the Dept. of Information and Communication Technologies. Email: xavier.serra@upf.edu
- **Dr. Minje Kim**, Principal Investigator of the Signals and AI Group in Engineering (SAIGE) at Indiana University, Assistant Professor in the Dept. of Intelligent Systems Engineering. Email: minje@indiana.edu
- **Dr. Richard Boulanger**, Professor in the Electronic Production & Design Dept. at Berklee College of Music. Email: rboulanger@berklee.edu