Emmanouil Theofanis **Chourdakis**

PhD Candidate of Computer Science – Audio / Machine Learning / Data Science

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Summary

A PhD Candidate at Queen Mary University of London who successfully defended on April 1st, 2020 and will be awarded a Doctor's degree once requested amendments are submitted and accepted. Five years of coding experience in academia, and more as a hobbyist.

Skills

Programming Languages Python, Matlab, C, C++, Javascript.
Audio Juce,Faust, Essentia, WAET (For conducting listening tests), DAWs, Sonic-Visualiser, Praat.
Data Science R, NumPy, Pandas, Scikit-Learn, Keras (Tensorflow), Pytorch, SpaCy, NLTK, SQL.
Misc Linux, Git, Docker, Anaconda, LaTeX.
Human Languages English (TOEFL, 6+ years in London), Greek (native language).

Industry Experience

BBC Audio R&D *London, UK*

Intern *Dec. 2018 - Apr. 2019*

- Developed adaptive audio effects as Web Audio Worklets using Javascript and the Web Audio API for use in an internally developed storyboard system. Developed a variety of scripts that allows rapid prototyping of such effects.
- Developed a Flask-based API for Music Information Retrieval (MIR) using Docker, SQLite, and the Essentia MIR library that did audio content analysis using deep learning to control the aforementioned effects.
- Implemented an object mixing method for hard of hearing listeners as a plugin for VST hosts, as well as Avid Pro Tools using Faust, C++, and Juce.
- Published a peer-reviewed paper on using probabilistic programming and machine learning to automate the mixing process of the above object-based effect.
- Wrote extensive internal guides for building audio effects for the web as well as VST and AAX plugins.

Academic Experience

Queen Mary University of London *London, UK*

PhD Candidate *Apr. 2015 -*

- Program Committee (PC) Member for the Sound And Music Computing 2019 and 2020 Technical Programs (SMC 2019/2020).
- PC Member for the China Conference on Sound and Music Technology 2018 Technical Program (CSMT 2018).
- Sub-reviewer for the 2018 International Conference on Digital Audio Effects (DAFx 2018).
- Teaching Assistant for supporting Matlab-based MSc final projects.
- Teaching Assistant for the Music and Speech processing and Advanced Transform Methods postgraduate modules.
- Script marking for the Digital Signal Processing module.
- Paper session chair for the Digital Signal Processing technical track of the 146th AES Convention (April 2019, Dublin, Ireland).
- Poster session chair for the 2nd Workshop on Intelligent Music Production (September 2016, London, UK).
- Staff Volunteer for the #AudioMusicHackathon hackday (July 2015, London, UK).

Education

Queen Mary University of London *London, UK*

PhD in Computer Science (Successfully defended – Pending corrections) *April 2020*

- Thesis titled "Computational Methods for Assisting Radio Drama Production".
- Use of Artificial Intelligence to assist an aspiring radio drama team in producing radio drama.
- Heavily based around Natural Language Processing techniques, and Information Retrieval.

Queen Mary University of London *London, UK*

MSc in Digital Music Processing (Graduated with distinction – 80/100) *September 2014*

- Thesis project used Machine Learning to understand a song track's audio with the goal to control an audio effect for applying reverberation.
- 2014 Michael Clark Prize for Best Electronic Engineering Project

Technical University of Crete *Chania, Greece*

Electronic and Computer Engineering Diploma (Graduated with mark "Very Good" – 7.46/10) *July 2011*

- Thesis project used inductive logic programming to learn musical composition rules from examples to compose similar ones.

Recent Github/Kaggle/Google Play work samples

PyopenAL-HRTF	HRTF extensions for the Python OpenAL bindings.
Genre-Recognition	A Music Genre Classifier using transfer learning developed with MusiCNN, XGBoost, and Docker.
Audio-Dafx2019-Automatic	Classification of raw audio to Speech, Music, or Sound Effects using Keras. Also: Modelling of mixing decisions of engineers when mixing for hard-of-hearing listeners.
SimScene.py	Python library and tool for hierarchical construction of acoustical scenes.
Spacy-Clausie	A rule-based text information extraction system implemented in SpaCy with bindings for Problog.
MiniePY	Python bindings for the MinIE information extraction system.
SpRL-SpaCy	A library for Spatial Role Labelling using SpaCy.
Smooth-Convex-KL-NMF	Python library for minibatched NMF with sparsity and smoothness constraints.
CharacterAwareNeuralModels	A tutorial for step-by-step implementation of Char-LSTM-CNNs in Keras.
Kaggle Connect X	A NegaMax Kaggle Kernel with $\alpha\beta$-pruning and memoization.
20 Candles	A touchscreen-based puzzle game for Android with procedural level generation written in Godot.
Other	Various contributions to open source software (please ask).

Dipl.-Eng/MSc coursework examples

Digital Audio Effects	Implementation of a 4-band dynamic range compressor as a VST using C++ and Juce. Implementation of a subtractive synthesizer as a VSTi using C++ and Juce.
Real Time DSP	Implementation of a real time phase vocoder for MIDI-controlled voice robotisation using C for the BeagleBoneBlack ARM Cortex A8-based single-board computer.
Audio and Music Processing	Chord Recognition on "The Beatles" discography using Hidden Markov Models.
Autonomous Agents	A probabilistic model for music cognition in real time.

Notable Publications

- E. T. Chourdakis et al. "Modelling Experts' decisions on assigning narrative importances of objects in a radio drama mix". In: *22nd International Conference on Digital Audio Effects*. UK, Sept. 2019
- E. T. Chourdakis and J. D. Reiss. "Tagging and Retrieval of Room Impulse Responses Using Semantic Word Vectors and Perceptual Measures of Reverberation". In: *146th Audio Engineering Society Convention*. Ireland, Mar. 2019
- B. Shirley, L. A. Ward, and E. T. Chourdakis. "Personalization of Object-based Audio for Accessibility using Narrative Importance." In: *ACM International Conference on Interactive Experiences for Television and Online Video, Workshop on In-Programme Personalisation*. UK, June 2019
- E.T. Chourdakis and J.D. Reiss. "Grammar Informed Sound Effect Retrieval for Soundscape Generation". In: *DMRN+ 13: Digital Music Research Network*. UK, Dec. 2018
- E. Chourdakis and J.D. Reiss. "From my pen to your ears: automatic production of radio plays from unstructured story text". In: *15th Sound and Music Computing Conference*. July 2018
- E. T. Chourdakis and J. D. Reiss. "Constructing narrative using a generative model and continuous action policies". In: *10th INLG Workshop on Computational Creativity in Natural Language Generation*. Sept. 2017
- E. T. Chourdakis and J. D. Reiss. "A Machine-Learning Approach to Application of Intelligent Artificial Reverberation". In: *Journal of the Audio Engineering Society* 1/2 (Feb. 2017), pp. 56–65
- E. T. Chourdakis and J. D. Reiss. "Automatic Control of a Digital Reverberation Effect using Hybrid Models". In: *60th Audio Engineering Society Conference on Dereverberation and Reverberation of Audio, Music, and Speech*. Jan. 2016