Nikolaos Dionelis

Contact Data

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EU Citizen, EEA National

Education and Qualifications

2015–2019 **Imperial College London, UK:** PhD Degree in Signal Processing

Electrical Engineering, Communications and Signal Processing Group, (click here)

Research Interests: Machine learning; Deep learning; Signal processing; Nonlinear filtering; Audio and acoustics; Speech enhancement, separation, and recognition; Blind dereverberation; Speech diarization; Multimodal audio-visual fusion; Affective computing; Emotion detection

Programming: Python, C++, MATLAB. Coding in Python: PyTorch, TensorFlow, Keras, Spyder IDE, PyCharm IDE. Deep Neural Networks with PyTorch, Keras, and Chainer. GitHub: (click here)

PhD Thesis: "Modulation-domain Kalman filtering for single-channel speech enhancement, denoising, and dereverberation". Supervisors: Mike Brookes and Prof. Patrick A. Naylor

Engineering and Physical Sciences Research Council (EPSRC) Doctoral Training Award

PhD Degree: (click here). Courses: Statistical Machine Learning, (Convex) Optimization

2011–2015 **Imperial College London, UK:** Masters MEng Degree in Electrical Engineering

Credits ECTS: 261. Overall Grade: First Class Honours, 1st (72.8%)

Fourth Year: Total Grade: 1st (75.5%). Third Year: Total Grade: 1st (75.5%)

MEng Degree Courses: Machine Learning for Computer Vision (84%); Mathematics for Signals and Systems (82%); Digital Signal Processing (85%); Spectral Estimation and Adaptive Signal Processing (71%); Wavelets and Applications (76%); Advanced Signal Processing (73%)

Transcript of Masters MEng Degree in Electrical Engineering: (click here)

Coursework for (1) Machine Learning, (2) Optimization, and (3) Wavelets: (click here)

Third Year Group Project, Floating-Point Unit (FPU) Design: (click here) and (click here)

Courses: (click here). Fourth Year Dissertation Project on Signal Processing: (click here)

2000–2011 **Hellenic American Educational Foundation (HAEF) Athens College**

2011, International Baccalaureate (40/45); A-level Mathematics (A); IELTS (7.5)

Publications

2020 **N. Dionelis**, M. Yaghoobi, and S. A. Tsaftaris, "Boundary of Distribution Support Generator (BDSG): Sample Generation on the Boundary," Paper Accepted for Publication. Online: (click here)

2019 **N. Dionelis**, "Literature Review of Methods for Anomaly Detection," Technical Report on Generative Models and Generative Adversarial Networks (GANs), University of Edinburgh, UK

2019 **N. Dionelis**, "Modulation-Domain Kalman Filtering for Single-Channel Speech Enhancement, Denoising and Dereverberation," PhD Thesis, Imperial College London. Online: (click here)

2019 **N. Dionelis** and M. Brookes, "Modulation-Domain Kalman Filtering for Speech Dereverberation and Noise Suppression," IEEE Transactions on Audio, Speech, and Language Processing, Volume 27, Issue 4, April 2019. Online: (click here)

2018 **N. Dionelis** and M. Brookes, "Phase-Sensitive Single-Channel Speech Enhancement with Modulation-Domain Kalman Filtering," IEEE Transactions on Audio, Speech, and Language Processing, Volume 26, Issue 5, May 2018. Online: (click here)

2018 **N. Dionelis** and M. Brookes, "Speech Enhancement in the Bark Spectral Domain," in Proceedings European Signal Processing Conference (EUSIPCO). Online: (click here)

2018 **N. Dionelis**, "Single-Channel Speech Enhancement with Nonlinear Modulation-Domain

Publications (Continued)

Kalman Filtering," preprint arXiv:1811.00078. Online: (click here)

2017 **N. Dionelis** and M. Brookes, "Modulation-Domain Speech Enhancement Using a Kalman Filter with a Bayesian Update in the Log Spectral Domain," in Proceedings Hands-Free Speech Communication and Microphone Arrays Workshop, San Francisco. Online: (click here)

2017 **N. Dionelis** and M. Brookes, "Speech Enhancement Using Modulation-Domain Kalman Filtering with Speech Level Normalized Priors," in Proceedings EUSIPCO. Online: (click here)

2016 **N. Dionelis** and M. Brookes, "Speech Level Estimation in Noisy Signals with Quadrature Noise Suppression," in Proceedings EUSIPCO. Online: (click here)

Reviewer: IEEE Transactions, 6 times; Speech Communication, EURASIP Journal, 3 times

Attendance: Sensor Signal Processing for Defence (SSPD) 2019; InterSpeech 2017, (click here); 24th International Congress on Sound and Vibration (ICSV24); 60th Audio Engineering Society (AES)

Work Experience

2019 – Today | University Defence Research Collaboration (UDRC), UK
UDRC in Signal Processing: (click here), University of Edinburgh
Postdoctoral Research: Research Associate (RA) in Machine Learning
Robust Generative Neural Networks: Generative Adversarial Networks (GANs), Variational Autoencoders (VAEs), GAN-VAEs for anomaly detection. Developing machine learning models and a Python-based data analysis framework. Analyzing large datasets. Performing statistical analysis, e.g. hypothesis testing.

2015 – 2019 | Imperial College London, UK
Graduate Teaching Assistant, Electrical Engineering, MEng Degree Courses

2014 | Toumaz Sensium Healthcare, UK
Signal Processing and Biomedical Engineering Project. Report: (click here)
Statistical analysis of the electrocardiogram (ECG) and photoplethysmography (PPG) signals. Supervisor: Dr Ed Ang, (click here). Duration: 2 months

2013 | National Technical University of Athens, Greece
Department of Transportation Planning and Engineering: Responsible for collecting data/metadata regarding the Transport System. Duration: 3 weeks

2013 | Hellenic Civil Aviation Authority, Athens, Greece
Familiarized with the air navigation and air traffic control systems of the civil aviation and the Greek Flight Information Region (FIR). Duration: 6 weeks

2013 | Transmart Consulting, Athens, Greece
Participated in the preparatory work for three business project proposals for shipping, (civil) transportation, and airplane companies. Duration: 6 weeks

2013 | PostScriptum Media Design, Athens, Greece
Responsible for the design and maintenance of websites that aim to promote popular tourist destinations, attractions, and museums. Duration: 6 weeks

Interests and Responsibilities

2017, Imperial College London, Imperial - MIT Global Fellows Programme: (click here)

2014, Imperial College Business School, Summer Courses: Finance (71%), (click here); Business Strategy and Consulting. Intensive Programme: 6-weeks. Credits ECTS: 14

Google Scholar: (click here). MacBooks: 8-Core 2.3GHz, 4-Core 2.9GHz. UK Perm Residence