Demetrios Cantzos
Associate Professor
Office ZA205
Department of Industrial Design
and Production Engineering
University of West Attica
Tel: (+30)2105381588
Email: cantzos@uniwa.gr
Date of birth: 20/02/1980

CURRICULUM VITAE

Education:

- PhD in Electrical Engineering**,** University of Southern California (USC), Los Angeles, CA, 2008.
  Thesis: *"Statistical Enhancement Methods for Immersive Audio Environments and Compressed Audio"*
- MSc in Electrical Engineering, University of Southern California (USC), Los Angeles, CA, 2003.
- BSc in Physics, National University of Athens, Greece, 2002.
  Thesis on the *"Development of Visual C++ Code for the Analysis of Electromagnetic Phenomena in Waveguides"*

Research Interests:

- Digital signal processing, compression and enhancement of audio signals
- Pattern recognition and signal classification via machine learning methods
- Measurements and stochastic analysis of electromagnetic radiation

Research Experience:

- UniWA, "Off-shore Wind Turbine with Integrated System Co-management Software – ΠΑΡΑΛΟΣ^2», subtasks "Basic Controller Unit Redesign" and "Aeroelastic Test of Novel Design", 01/04/2021 - 31/12/2021.
- TEI of Piraeus, "Horizon 2020 Tilos - Technology innovation for the Local Scale, Optimum integration of Battery Energy Storage", 10/03/2016 - 31/07/2016.
- TEI of Piraeus, "Archimedes III – Integrated Electronic System Development, Embedded in Fabric, for the Measurement and Wireless Transmission of Biological Signals," 01//01/2015 - 30/04/2015.
- TEI of Piraeus, "Promoting Support of Academic Institutions to Young Farmers (code 80127): Development of Precision Agriculture system operating on wireless data," funded by the Greek General Secretariat of Youth, 01/01/2011 - 31/10/2012
- TEI of Piraeus, "FP6 - More Open Electrical Technologies," subtask "WP 7.21 Task 3 Modeling infrastructure model gathering and adaptation," funded by the European Union 6th Framework program, (FP6), 01/01/2009 - 31/07/2009.

- TEI of Piraeus, "System Design for Human-Machine Interface of Fuel Injection Engines," subtask "Measurements and Processing of Electrical Engine Signals," 01/06/2008 - 31/12/2008.

- Immersive Audio Laboratory, Integrated Media Systems Center (IMSC), University of Southern California. Project funded in part by the Integrated Media Systems Center, a National Science Foundation (NSF) Engineering Research Center, Cooperative Agreement No. EEC-9529152 and in part by the US Army Research, Development, and Engineering Command (RDECOM). Proposed and implemented a new method on multichannel audio compression and developed a new estimation technique for modeling audio signal features. Proposed and implemented a novel audio enhancement algorithm for compressed audio signals via statistical transformations. Proposed and implemented a novel audio synthesis algorithm to address audio enhancement with minimal prior information of the desired signal based on a combination of data-driven approaches and statistical transformation methods, 05/2005 - 06/2008.

- Space Laboratory, California State University, Los Angeles. Project "Segmented Space Telescope" funded by NASA as part of the JWST Telescope. Designed and implemented control algorithms as part of a three-member team. Responsible for designing and implementing a ray-tracing application for simulating the optical ray path on the telescope testbed, 01/09/2002 - 30/04/2005.

Teaching Experience:

- Associate professor, Dept. of Industrial Design and Production Engineering, University of West Attica, undergraduate courses (including labs) "Digital Signal Processing", "Electrical and Electronic Measurements" and "Signals and Systems", 29/04/2010 - today.

- Dept. of Industrial Design and Production Engineering and Dept. of Electrical and Electronics Engineering, University of West Attica, graduate course "Signal Processing, pattern Recognition and Machine Learning" of the "MSc in Artificial Intelligence and Deep Learning" (6/13 lectures).

- Dept. of Industrial Design and Production Engineering, University of West Attica, graduate course "Communications Systems Design" of the "MSc in Production and Services Automation" of TEI Piraeus, fall semesters of 2014, 2015, 2016 and 2017 (13/13 lectures), 2018 (8/13 lectures), 2019, 2020 and 2021 (9/13 lectures).

- Dept. of Accounting, TEI of Piraeus, graduate course "Quantitative Analysis in Business Decision Making" of the "Postgraduate MBA Program" of the University of Kentucky, USA with TEI Piraeus, fall semesters of 2014, 2015, 2016 and 2017.

- Dept. of Accounting, TEI of Piraeus, graduate course "Quantitative Methods for Decision Making" of the postgraduate program "Accounting and Finance" of TEI Piraeus, fall semester of 2015, 2016 and 2017.

- Dept. of Automation Engineering, TEI of Piraeus, graduate course "Digital Communications" of the "Msc in Networking and Data Communications" of TEI Piraeus in collaboration with Kinston University, London, fall semesters of 2010, 2011 and 2012.

- Teaching Assistant, Dept. of Electrical Engineering, University of Southern California for the course “Linear Algebra,” fall semester 2008.

- Grader, Dept. of Electrical Engineering, University of Southern California for the course “Introduction to Computer Networks,” spring semester 2005.

Administrative Experience:

- Chairman, committee for the evaluation of academic fellows for the academic years 2020-2021 and 2021-2022.

- Deputy Director, Sector II, Dept. of Industrial Design and Production Engineering for the academic year 2019-2020.

- Examiner of the course “Physics” for the placement exams of the Dept. of Industrial Design and Production Engineering for the academic years 2019-2020, 2020-2021 and 2021-2022.

- Member, committee for the preparation of the Studies Guide of the Dept. of Industrial Design and Production Engineering for the academic year 2020-2021.

- Director, Sector I, Dept. of Automation Engineering, academic years 2013-2014, 2014-2015 and 2015-2016, 2017-2018

- Deputy Director, Sector I, Dept. of Automation Engineering, academic years 2012-2013 and 2016-2017.

- Member, steering committee of the MSc program “Unmanned Autonomous and Remote Controlled Systems”, UniWA, 08/2021 - today.

- Member, steering committee of the MSc program “Production and Services Automation” 08/2018 - today.

- Member, steering committee of the MSc program “MSc in Networking and Data Communications” of TEI Piraeus and Kingston University, UK, 04/2013 - 08/2018.

- Member, committee for the evaluation of temporary teaching stuff for the Dept. of Automation Engineering, academic years 2010-2011, 2011-2012, 2012-2013, 2013-2014, and 2014-2015.

- Member, committee for the evaluation of students academic enrolment applications from other universities, academic year 2010-2011.

- Chairman, committee for the disposal of obsolete equipment for the Dept. of Automation Engineering, 2012.

- Member, scientific committee for the international conference eRA of TEI Piraeus, years 2011-2015.

- Member, scientific committee for the conference “Acoustics 2016” of the Hellenic Institute of Acoustics.

Publications in Journals:

- A. Alam, N. Wang, E. Petraki, A. Barkat, F. Huang, M. A. Shah, D. Cantzos, G. Priniotakis, P. Yannakopoulos, M. Papoutsidakis and D. Nikolopoulos, "Fluctuation Dynamics of Radon in Groundwater Prior to the Gansu Earthquake, China (22 July 2013: Ms= 6.6): Investigation with DFA and MFDFA Methods", Pure and Applied Geophysics, Vol. 178, Issue 9, pp.3375-3395, 2021.

- D. Nikolopoulos, K. Moustris, E. Petraki and D. Cantzos, "Long-Memory Traces in PM10 Time Series in Athens, Greece: Investigation through DFA and R/S Analysis", Meteorology and Atmospheric Physics, Vol. 133, Issue 2, pp.261-279, 2021.

- D. Nikolopoulos, E. Petraki, P. Yannakopoulos, G. Priniotakis, I Voyiatzis and D. Cantzos, "Long-Lasting Patterns in 3 kHz Electromagnetic Time Series after the ML = 6.6 Earthquake of 2018-10-25 near Zakynthos, Greece", Geosciences Vol. 10, Issue 6, 2020.

- D. Nikolopoulos, K. Moustris, E. Petraki, D. Koulougliotis and D. Cantzos, "Fractal and Long-Memory Traces in PM10 Time Series in Athens, Greece", Environments Vol. 6, Issue 3, 2019.

- D. Cantzos, D. Nikolopoulos, E. Petraki P. Yannakopoulos and C. Nomicos, "Earthquake Precursory Signatures in Electromagnetic Radiation Measurements in terms of Day-to-Day Fractal Spectral Exponent Variation: Analysis of the Eastern Aegean 13/04/2017-20/07/2017 Seismic Activity", Journal of Seismology, Vol. 22, Issue 6, pp.1419-1513, 2018.

- D. Nikolopoulos, P. Yannakopoulos, E. Petraki, D. Cantzos and C. Nomicos, "Long-Memory and Fractal Traces in KHz-MHz Electromagnetic Time Series Prior to the ML=6.1, 12/6/2007 Lesvos, Greece Earthquake: Investigation through DFA and Time-Evolving Spectral Fractals," Journal of Earth Science and Climatic Change, Vol. 9, Issue 4, 2018.

- D. Nikolopoulos, C. Matsoukas, P. Yannakopoulos, E. Petraki, D. Cantzos and C. Nomicos, "Long-Memory and Fractal Trends in Variations of Environmental Radon in Soil: Results from Measurements in Lesvos Island in Greece", Journal of Earth Science and Climatic Change, Vol. 9, Issue 4, 2018.

- D. Nikolopoulos, D. Cantzos, E. Petraki, D. Panagiotaras, P. Yannakopoulos and C. Nomicos, "Fractal Analysis of Pre-Seismic Electromagnetic and Radon Precursors: A systematic Approach," Journal of Earth Science and Climatic Change, Vol. 7, Issue 11, 2016.

- D. Cantzos, D. Nikolopoulos, E. Petraki, P. Yannakopoulos and C. Nomicos, "Fractal Analysis, Information-Theoretic Similarities and SVM Classification for Multichannel, Multi-Frequency Pre-Seismic Electromagnetic Measurements," Journal of Earth Science and Climatic Change, Vol. 7, Issue 8, 2016.

- D. Nikolopoulos, D. Cantzos, E. Petraki, P. Yannakopoulos and C. Nomicos, "Traces of Long-Memory in Pre-Seismic MHz Electromagnetic Time Series-Part1: Investigation through the R/S Analysis and Time-Evolving Spectral Fractals," Journal of Earth Science and Climatic Change Vol. 7, Issue 7, 2016.

- D. Nikolopoulos, I. Valais, C. Michail, A. Bakas, C. Fountzoula, D. Cantzos et al., "Radioluminescence Properties of the CdSe/ZnS Quantum Dot Nanocrystals with Analysis of Long-Memory Trends," Radiation Measurements, Vol. 92, pp.19-31, 2016.

- E. Petraki, D. Nikolopoulos, D. Panagiotaras, D. Cantzos, P. Yannakopoulos, et al., "Radon-222: A Potential Short-Term Earthquake Precursor," Journal of Earth Science and Climatic Change Vol. 6, Issue 6, 2015.

- D. Cantzos, D. Nikolopoulos, E. Petraki, C. Nomicos, PH Yannakopoulos, et al. "Identifying Long-Memory Trends in Pre-Seismic MHz Disturbances through Support Vector Machines," Journal of Earth Science and Climatic Change Vol. 6, Issue 3, 2015.

- E. Petraki, D. Nikolopoulos, C. Nomicos, J. Stonham, D. Cantzos, et al. "Electromagnetic Pre-earthquake Precursors: Mechanisms, Data and Models-A Review," Journal of Earth Science and Climatic Change Vol. 6, Issue 1, 2015.

- D. Cantzos, "Psychoacoustically-Driven Multichannel Audio Coding," Journal of Computations and Modelling, Vol. 3, no. 2, pp.95-110, 2013.

- D. Cantzos , "Towards a Complete Algorithm on Synthesis of Enhanced Audio from Low Bitrate Compressed Audio," International Journal of Engineering and Management Vol. 1 no. 2, 2009.

- D. Cantzos, A. Mouchtaris, and C. Kyriakakis, "Quality Enhancement of Compressed Audio Based on Statistical Conversion," Eurasip Journal on Audio, Speech and Music Processing, Vol. 2008, Article ID 462830, 2008.

- A. Khoshafian, H. Boussalis, S. Fallorina, E. Velazquez, K. Rad, C. Liu, D. Cantzos, "Application of Decentralized Control on a Segmented Reflected Testbed," WSEAS Journal of Transactions on Systems, Issue 5, Vol. 3, pp.2215-2222, July 2004.

Books:

- C. Karaiskos and D. Cantzos, "*Continuous and Discrete-Time Signals and Systems*," Sinchroni Ekdotiki, Athens, 2015 (in Greek).

Publications in peer-reviewed conference proceedings:

- D. Cantzos, D. Dimogianopoulos, and D. Tseles: A Hybrid Approach on ECG Diagnosis Based on Recursive Time Series Detection and Wavelet Features Classification Methods. Proceedings of the eRA-8 International Scientific Conference, Athens, Greece, September 2013.

- D. Cantzos, D. Dimogianopoulos and D. Tseles, "ECG Diagnosis via a Sequential Recursive Time Series – Wavelet Classification Scheme," IEEE Proc. Eurocon Conference, Zagreb, Croatia, July 2013.

- D. Cantzos, A. Mouchtaris and C. Kyriakakis, "Perceptually-Driven Scalable MDCT Enhancement of Compressed Audio Based on Statistical Conversion," IEEE Proc. International Symposium on Multimedia (ISM), Dana Point, CA, USA, pp.41-47, December 2011.

- D. Cantzos, A. Mouchtaris and C. Kyriakakis, "Bandwidth Extension of Low Bitrate Compressed Audio Based on Statistical Conversion," IEEE Proc. 10th International Conference on Multimedia and Expo (ICME), New York, NY, pp. 97-100, July 2009.

- D. Cantzos, A. Mouchtaris and C. Kyriakakis, "Synthesis of Enhanced Audio from Low Bitrate Compressed Audio Based on Unit Selection and Statistical Conversion Methods," IEEE Proc. 42nd Asilomar Conference on Signals and Systems, Pacific Grove, CA, pp. 2174-2179, October 2008.

- D. Cantzos, A. Mouchtaris and C. Kyriakakis, "Enhanced Multichannel Audio Resynthesis through Residual Processing and Features Alignment," IEEE Proc. 8th International Conference on Multimedia and Expo (ICME), Beijing, China, pp. 1267-1270, July 2007.

- D. Cantzos, A. Mouchtaris and C. Kyriakakis, "Multichannel Audio Resynthesis Based on a Generalized Gaussian Mixture Model and Cepstral Smoothing," IEEE Proc. 7th Workshop on Applications of Signal Processing to Audio and Acoustics (WASPAA), New York, NY, pp. 215-218, October 2005.

- D. Cantzos, and C. Kyriakakis, "Quality Enhancement of Low Bit Rate MPEG1-Layer 3 Audio Based on Audio Resynthesis," 119th AES Convention, New York, NY, preprint No. 6569, October 2005.

- A. Khoshafian, H. Boussalis, S. Fallorina, E. Velazquez, K. Rad, C. Liu and D. Cantzos, "Decentralized Control of a Segmented Reflector Testbed," IEEE Proc. 47th International Midwest Symposium on Circuits and Systems, Hiroshima, Japan, pp. 211-214, July 2004.

Lecture Notes:

- "Electrical and Electronic Measurements", Lecture Notes, D. Cantzos, Dept. of Automation Engineering, 2013.

- "Digital Signal Processing", Lecture Notes, D. Cantzos, Dept. of Automation Engineering, 2013.

- "Electrical and Electronic Measurements", Laboratory Notes, D. Cantzos, Dept. of Automation Engineering, 2013.

- "Digital Signal Processing", Laboratory Notes, D. Cantzos, Dept. of Automation Engineering, 2013.

Programming Skills:

- C, Visual C++, Matlab, Python, Labview, Socket programming, Mathematica, Mathcad, R, HTML.

Awards:

- Graduate Teaching Assistantship Dept. of Electrical Engineering, University of Southern California, fall semester 2008.
- Graduate Research Assistantship, Dept. of Electrical Engineering, University of Southern California, 05/2005 – 05/2008.
- Gerondelis Foundation Scholarship, 2003.

Memberships:

- Member, IEEE - Signal Processing Society.

Languages :

- Greek (native speaker)
- English (Cambridge Proficiency, 1995)
- German (Zertifikat Grundstufe, 1996)

Family Status:

- Married, two children