

CURRICULUM VITAE

PERSONAL INFORMATION

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RESEARCH INTERESTS

Networked Music Performance

Research and development of systems that enable real-time interaction between geographically displaced musicians using computer networks.

Machine Listening / Computer Audition

The broader field of implementing algorithms for the retrieval and interpretation of the semantic content of audio signals. My interests in this area pertain to Music Information Retrieval applications and problems related to estimating acoustic models from the produced sound.

Computer Supported Cooperative Work

Development of systems that support practices of synchronous and asynchronous collaboration through computers, networks, and enabling technology. My interests in this field focus on practices of music collaboration over the Internet and the interaction of participants in a session with digital music representations, such as scores, innovative visualizations, and annotations of musical content.

FORMAL EDUCATION

2009 - 2014 PhD in Systematic Musicology, University of Hamburg, Germany

- Dissertation Title: *Realtime Machine Listening and Segmental Resynthesis for Networked Music Performance*
- Briefly: The dissertation focuses on leveraging Machine Listening algorithms and music content analysis to address the technological challenges of Networked Music Performance (NMP) systems, specifically in minimizing transmission delays and ensuring the availability of network bandwidth. Specifically, the dissertation explores the potential of training Hidden Markov Models (HMMs) to predict music performance in advance, which is then re-synthesized at remote network locations through the reception of low-bandwidth updates. This re-synthesis is based on pre-existing recordings, which are transformed using Computer Accompaniment techniques.

1996 – 1997 MSc in Music Technology, University of York, UK

- Thesis Title: *Fractal Audio Format: a fractal approach to audio compression*
- Briefly: This work proposes a novel scheme for lossy audio compression by leveraging affine transformations to identify self-similarities in audio signals. The technique was inspired by similar methods that were previously applied to images (i.e. Fractal Image Format).

1990 – 1996 Degree in Physics, National and Kapodistrian University of Athens

- Thesis Title: *Fourier Analysis of Acoustic Waves*
- Briefly: The work focuses on the effect of physical parameters and geometric characteristics on the spectra of generated one-dimensional acoustic waves, such as strings and pipes, etc.

1996-1997 Harmony Diploma, Athenaeum Conservatory

- Additional studies: Piano, Advanced School

PROFESSIONAL CAREER

August 2024 – Now, Associate Professor, Hellenic Mediterranean University, School of Music and Optoacoustic Technologies, Department of Music Technology and Acoustics

May 2019 – August 2024, Assistant Professor, Hellenic Mediterranean University, School of Music and Optoacoustic Technologies, Department of Music Technology and Acoustics

March 2017 – May 2019, Assistant Professor, Technological Educational Institute of Crete, School of Applied Sciences, Department of Music Technology and Acoustics

October 2005 – March 2017, Lecturer, Technological Educational Institute of Crete, School of Applied Sciences, Department of Music Technology and Acoustics

March 2001 – September 2005, Software Engineer, Foundation for Research and Technology, Institute of Computer Science, Heraklio

July 2000 – December 2000, R&D Engineer, Sony Digital Media Europe, Brussels

February 1999 – June 2000, Software Engineer, Intrasoft International S.A., Brussels

FUNDED RESEARCH

A. Coordination

30/7/2021 – Scientific Coordination
16/12/2023 [MusiCoLab – Virtual Music Education and Collaboration Laboratory](#)
Co-financed by the European Regional Development Fund of the European Union and Greek national funds through the Operational Program Competitiveness, Entrepreneurship and Innovation, under the call RESEARCH – CREATE – INNOVATE. Budget: 386.040,40 €

The MusiCoLab project focuses on the development of an innovative technological product to support online music education throughout synchronous and asynchronous collaboration practices. Unlike other educational fields, music presents significant challenges regarding synchronization and Quality of Service. Key innovations of the project include the use of artificial intelligence models for the retrieval, analysis/synthesis, and processing of musical content artifacts, as well as practices of enhanced virtual presence in collaborative software systems.

1/4/2012 – Principal Investigator on behalf of the Technological Educational Institute of Crete
30/9/2015 [MusiNet: Comprehensive Design and Implementation of a Networked Music Performance System](#)

Co-financed by the European Union (European Social Fund - ESF) and Greek national funds through the Operational Program "Education and Lifelong Learning" of the National Strategic Reference Framework (NSRF) - Research Funding Program: THALIS, Budget 600.000,00 €

This project was a continuation of DIAMOUSES, exploring the concept of Networked Music Performance (NMP) using cutting-edge technology of that time. It focused on investigating the potential of network architectures such as including SIP Servers, the use of low-latency codecs such as the Opus audio Codec and the H.264 Scalable Video Codec, as well as the use of cloud services for remote collaboration between musicians.

1/8/2006 - Principal Investigator and Project Coordinator
31/3/2008 [DLA.MOUS.ES - Distributed InterActive communication environment for live MUSIC performance\(S\)](#)

Implemented in the context of the Regional Operational Program of Crete, Budget: 638.532,00 €

This was one of the first international research projects in the field of Networked Music Performance (NMP), within which an infrastructure was developed that focused on innovations such as the ability to host different music collaboration scenarios within the same architecture, the capacity to support experimental forms of music performance and electronic musical instruments using mechanical sensors and other related devices, as well as the integration of DVB-T terrestrial digital television networks. Indicative of the project's impact is its mention on the [Networked Music Performance page of Wikipedia](#)

B. Member of the research team

15/5/2021 - 30/11/2021 **ΑΝΟΙΚΤΑ ΑΚΑΔΗΜΑΪΚΑ ΗΛΕΚΤΡΟΝΙΚΑ ΣΥΓΓΡΑΜΜΑΤΑ – ΚΑΛΛΙΠΟΣ+**
και
15/2/2022 - 15/10/2022 Δύο συμβάσεις με τον ΕΛΚΕ Εθνικού Μετσόβιου Πολυτεχνείου (ΕΜΠ) για συγγραφή του βιβλίου

1/9/2012 - 31/5/2015 **P-Nets: Εικονικά δίκτυα πρακτικής – Διαδικασίες αναδυόμενης γνώσης σε εικονικές συμπράξεις**
Αρχμήδης ΙΙΙ, Ενίσχυση Ερευνητικών Ομάδων στο ΤΕΙ Κρήτης

1/2/2011 – 31/12/2012 **AMIBIO – Automatic Monitoring and Inventorying of BIOdiversity, FP7 Life+**

1/7/2007 - 31/3/2008 **eKoNES - eKonikes κοιΝότητες Επιχειρηματικότητας & καινοτομίαΣ στην περιφέρεια,**
Υλοποιήθηκε στο πλαίσιο του Προγράμματος ΠΕΠ Κρήτης

1/10/ 2004 – 30/9/2005 **MICOLE - Multimodal collaboration environment for inclusion of visually impaired children,** Funding Program: FP6-IST, Project Reference: 51159

- 1/6/2004 - 30/9/2004 **ASPIDA - ASynchronous open-source Processor pI of the DLX Architecture**, Funding Program: FP5-IST, Project Reference: IST-2002-37796
- 1/5/2003 – 31/5/2004 **2WEAR - A Runtime for Adaptive and Extensible Wireless Wearables**, Funding Program: FP5-IST Project Reference: IST-2000-25286
- 1/1/2002 – 30/4/2003 **PALIO - Personalised Access to Local Information and Services for Tourists**, Funding Program: FP5-IST Project Reference: IST-1999-20656
- 1/10/2002 – 31/12/2002 **SEN-IST-NET - European Network of Excellence in Information Society Technologies for Special Educational Needs**, Funding Program: FP5-IST, Project Reference: IST-2000-26449
- 1/7/2001-30/9/2002 **VIEW - Virtual and Interactive Environments for Workplaces of the Future**, Funding Program: FP5-IST, Project Reference: IST-2000-26089
- 15/3/2001 – 30/6/2001 **InclusiveByDesign - Social Inclusion by Proactive Design**, Project Reference: VP/2000/008

PUBLICATIONS

A. Textbook

- [1] Koutras, A., **Alexandraki, C.**, Zarouchas, T., Zervas, P., & Chatziantoniou, P. (2023). Audio, speech and music processing and analysis. Kallipos, Open Academic Editions. <https://dx.doi.org/10.57713/kallipos-347>, <https://dx.doi.org/10.57713/kallipos-347>

B. Journal articles and chapters in edited volumes

- [1] Brezas, S., Paschalidou, S., **Alexandraki, C.**, Bakarezos, M., Georgatou, C., Kaleris, K., ... & Dimitriou, V. (2024). Research in the Department of Music Technology and Acoustics of the Hellenic Mediterranean University: An Overview and Prospects. *WSEAS Transactions on Acoustics and Music*, 11, 1-19.
- [2] **Alexandraki, C.**, Starakis, M., Zervas, P., & Bader, R. (2023): Inferring Drumhead Damping and Tuning from Sound Using Finite Difference Time Domain (FDTD) Models. *Acoustics*, 5(3), 798-816. <https://doi.org/10.3390/acoustics5030047>
- [3] Kaliakatsos-Papakostas M, Velenis K, Pasiadis L, **Alexandraki C.**, Cambouropoulos E. (2023): An HMM-Based Approach for Cross-Harmonization of Jazz Standards. *Applied Sciences*. 13(3): 1338. <https://doi.org/10.3390/app13031338>
- [4] Kaselouris E, Paschalidou S, **Alexandraki C.**, Dimitriou V. (2023): FEM-BEM Vibroacoustic Simulations of Motion Driven Cymbal-Drumstick Interactions. *Acoustics*. 5(1):165-176. <https://doi.org/10.3390/acoustics5010010>
- [5] Kaselouris E., **Alexandraki C.**, Bakarezos M., Tatarakis M., Papadogiannis N.A., Dimitriou V.(2022): A Detailed FEM Study on the Vibro-acoustic Behaviour of Crash and Splash Musical Cymbals, *International Journal of Circuits, Systems and Signal Processing*, vol.16: pp. 948-955, <https://doi.org/10.46300/9106.2022.16.116>
- [6] **Alexandraki, C.** (2019). “Experimental Investigations and Future Possibilities in Network-Mediated Folk Music Performance”. In: Bader R. (eds) *Computational Phonogram Archiving. Current Research in Systematic Musicology*, vol 5., Springer International Publishing (pp. 207–228). https://doi.org/10.1007/978-3-030-02695-0_10

- [7] **Alexandraki C.** & Bader R. (2016): Anticipatory Networked Communications for Live Musical Interactions of Acoustic Instruments, *Journal of New Music Research*, doi: <http://dx.doi.org/10.1080/09298215.2015.1131990>
- [8] Zervas P. & **Alexandraki C.** (2015). “Facilitating Open-Source Software and Standards to Assembly a Platform for Networked Music Performance”. In: Kanelopoulos D., ed. *Emerging Research on Networked Multimedia Communication Systems*, IGI Global Inc., pp. 334-365
- [9] Akoumianakis D. & **Alexandraki C.** (2012): Collective Practices in Common Information Spaces: Insight from Two Case Studies, *Human-Computer Interaction Journal*, 27(4): 311-351
- [10] Zervas P. & **Alexandraki C.** (2013). “The Realisation of Online Music Services through Intelligent Computing”. In: Kanelopoulos D., ed. *Intelligent Multimedia Technologies for Networking Applications: Techniques and Tools*, IGI Global Inc., pp. 291-317
- [11] **Alexandraki C.** & Akoumianakis D. (2010): Exploring New Perspectives in Network Music Performance: The DIAMOUSES Framework, *Computer Music Journal*, 34(2): 66-83
- [12] **Alexandraki C.** & Valsamakis N. (2009) “Enabling Virtual Music Performance Communities”. In: Akoumianakis D., ed. *Virtual Community Practices and Social Interactive Media: Technology Lifecycle and Workflow Analysis*, IGI Global Inc., pp. 376 - 397

C. Conference Proceedings (peer reviewed)

- [1] Starakis M. & **Alexandraki C.** (2024) AudioInsight: Online exploration of Large Audio Datasets for Musical Acoustics. *5th International Symposium on the Internet of Sounds*, Erlangen, Germany. [accepted]
- [2] **Alexandraki C.**, Starakis M., Bader, R., Zervas, P. (2023) Machine Learning of Finite-Difference Time Domain (FDTD) Physical Modelling Sound Simulations of Drumhead Paste Pattern Distributions. In *Proceedings of the Forum Acusticum*, Torino, Italy, September 2023. DOI: [10.61782/fa.2023.1053](https://doi.org/10.61782/fa.2023.1053)
- [3] **Alexandraki C.**, Mimidis N., Viglis Y., Nousias A., Milios D., Tsioutas K. (2023) Collaborative playalong practices in online music lessons: the MusiCoLab Toolset. *4th International Symposium on the Internet of Sounds*, Pisa, Italy. doi: [10.1109/IEEECONF59510.2023.10335236](https://doi.org/10.1109/IEEECONF59510.2023.10335236).
- [4] **Alexandraki C.**, Akoumianakis D., Milios D., Nousias A., Viglis Y., Kalochristianakis M., Velenis K. and Kaliakatsos- Papakostas, M. (2023). Collaborative score transformations in online music lessons: the MusiCoLab Toolset. *4th International Symposium on the Internet of Sounds 2023*, Pisa, Italy. doi: [10.1109/IEEECONF59510.2023.10335360](https://doi.org/10.1109/IEEECONF59510.2023.10335360).
- [5] **Alexandraki C.**, Akoumianakis, D., Kalochristianakis, M., Zervas, P., Kaliakatsos-Papakostas, M. and Cambourpoulos, E. (2022). MusiCoLab: Towards a Modular Architecture for Collaborative Music Learning. *Web Audio Conference 2022*, Cannes, France. <https://doi.org/10.5281/zenodo.6770559>
- [6] Akoumianakis, D., **Alexandraki C.**, Milios, D. Nousias, A. (2022) Synchronous Collaborative Music Lessons and their digital materiality. *Web Audio Conference 2022*, Cannes, France. <https://doi.org/10.5281/zenodo.6768537>
- [7] Kalochristianakis, M., Zervas, P. and **Alexandraki C.** (2022). An Intelligent Data Repository Consolidating Artifacts of Music Learning. *Web Audio Conference 2022*, Cannes, France <https://doi.org/10.5281/zenodo.6768630>

- [8] Kaselouris E., **Alexandraki C.**, Orphanos Y., Bakarezos E., Tatarakis M., Papadogiannis N., Dimitriou V. (2021). “Acoustic analysis of impact sound on vibrating circular membranes,” *Proceedings of INTER-NOISE and NOISE-CON, Institute of Noise Control Engineering*, 263:3, pp. 3378-3385
- [9] Akoumianakis D., **Alexandraki C.**, Alexiou V., Anagnostopoulou C., Eleftheriadis A., Lalioti V., Mastorakis Y., Modas A., Mouchtaris A., Pavlidi D., Polyzos G.C., Tsakalides P., Xylomenos G. and P. Zervas. (2015). “The MusiNet project: Addressing the challenges of Networked Music Performance systems,” *Proceedings of The 6th International Conference on Information, Intelligence, Systems and Applications, IISA 2015, IEEE*
- [10] Akoumianakis D., **Alexandraki C.**, Alexiou V., Anagnostopoulou C., Eleftheriadis A., Lalioti V., Mouchtaris A., Pavlidi D., Polyzos G. C., Tsakalides P., Xylomenos G. and P. Zervas. (2014). “The MusiNet project: Towards unravelling the full potential of Networked Music Performance systems,” *Proceedings of The 5th International Conference on Information, Intelligence, Systems and Applications, IISA 2014, IEEE*
- [11] **Alexandraki, C.** & Bader, R. (2014). Using computer accompaniment to assist networked music performance. In *Proceedings of the 53rd AES International Conference: Semantic Audio* (pp. 107–116). Audio Engineering Society. **[Best Poster Award]**
- [12] Akoumianakis D., Ktistakis G., Vlachakis G., Zervas P., and **C. Alexandraki**. (2013). “Collaborative music making as 'remediated' practice: Blending boundary objects and cloud services”, *Proceedings of the 18th International Conference on Digital Signal Processing (DSP)*, Fira, Greece, 2013, pp. 1-8, doi: 10.1109/ICDSP.2013.6622733
- [13] **Alexandraki, C.** & Bader, R. (2013). Real-time concatenative synthesis for networked musical interactions. In *Proceedings of Meetings on Acoustics* (Vol. 19). <https://doi.org/10.1121/1.4800043>
- [14] Akoumianakis, D. & **Alexandraki, C.** (2010). Understanding Networked Music Communities through a practice-lens: Virtual 'tells' and cultural artifacts, *2nd International Conference on Intelligent Networking and Collaborative Systems (INCoS 2010)*, November 24-26, Thessaloniki, Greece, IEEE Computer Society, pp. 62-69 doi: 10.1109/INCOS.2010.65.
- [15] Akoumianakis D., Vellis G., Milolidakis I., Kotsalis D., **Alexandraki C.** (2008) “Distributed collective practices in collaborative music performance”, *Proceedings of the 3rd International Conference on Digital Interactive Media in Entertainment and Arts (DIMEA 2008)*, 10-12 September 2008, Athens, Greece, pp. 368-375 <https://doi.org/10.1145/1413634.1413700>
- [16] **Alexandraki C.**, Koutlemanis P., Gasteratos P., Valsamakis N., Akoumianakis D., Milolidakis G., Vellis G., Kotsalis D. (2008) “Towards the Implementation of a Generic Platform for Networked Music Performance: The DIAMOUSES approach”, *Proceedings of the ICMC 2008 International Computer Music Conference (ICMC 2008)*, 24-29 August 2008, Belfast, Northern Ireland, pp. 251-258
- [17] **Alexandraki C.**, Koutlemanis P., Gasteratos P., Akoumianakis D., Milolidakis G., Vellis G., Kotsalis D. (2008). “DIAMOUSES: An experimental platform for network-based collaborative musical interactions”, *Proceedings of the ICEIS 2008 International Conference on Enterprise Information Systems*, 12-16 June 2008, Barcelona, Spain, pp. 30-37
- [18] **Alexandraki C.**, Kalantzis I. (2007). “Requirements and Application Scenarios in the Context of Network Based Music Collaboration”, *Proceedings of the AXMEDIS 2007 Conference i-maestro workshop*, 28-30 November 2007, Barcelona, Spain, pp. 39-46
- [19] Basdekis, I., **Alexandraki, C.**, Mourouzis, A., & Stephanidis, C. (2005). “Incorporating Accessibility in Web-Based Work Environments: Two Alternative Approaches and Issues Involved”, *Proceedings of the 11th International Conference on Human-Computer Interaction (HCI International 2005)*, 22-27 July 2005, Las Vegas, Nevada, USA.

- [20] **Alexandraki, C.**, Paramythis, A., Maou, N., Stephanidis, C. (2004). Web Accessibility through Adaptation. In: Miesenberger, K., Klaus, J., Zagler, W.L., Burger, D. (eds) Computers Helping People with Special Needs. ICCHP 2004. *Lecture Notes in Computer Science*, vol 3118. Springer, Berlin, Heidelberg. https://doi.org/10.1007/978-3-540-27817-7_46
- [21] Paramythis A., **Alexandraki C.**, Segkos I., Maou N., Stephanidis C. (2003) “Personalisable, Context-aware Services: The PALIO approach”, *Proceedings of the HCI International 2003-Volume IV Universal Access in HCI*, Lawrence Erlbaum Associates Publishers, 22-27 June 2003, Crete, Greece, pp. 582-586
- [22] Paramythis A., **Alexandraki C.**, Segkos I., Maou N., Stephanidis C. (2003) “The PALIO Framework for Hypermedia Adaptations”, *Proceedings of the HCI International 2003-Volume IV Universal Access in HCI*, Lawrence Erlbaum Associates Publishers, 22-27 June 2003, Crete, Greece, pp .587-591

D. Conference articles and presentations

- [1] Παρουσίαση σε συνέδριο με κρίση περίληψης: Γεωργάτου Χ., Τζεδάκη Κ., **Αλεξανδράκη Χ.**, Ρεμούνδου Η., Γκοσν Ν., Νύκτας Π. (2023) «Η παρατήρηση των ήχων της φύσης για την παρακολούθηση προστατευόμενων περιοχών. Η εφαρμογή των ακουστικών δεικτών στο Εθνικό Πάρκο Σαμαριάς –Λευκά Όρη», 2023 *Helecos: "Η οικολογία στην ανθρωπόκαινο εποχή". 11ο οικολογικό συνέδριο*, 4-7 Οκτωβρίου, Πάτρα
- [2] Ανάρτηση Αφίσας: Γεωργάτου Χ., Τζεδάκη Κ., **Αλεξανδράκη Χ.**, Ρεμούνδου Η., Γκοσν Ν., Νύκτας Π. (2023) «Η παρατήρηση των ήχων της φύσης για την παρακολούθηση προστατευόμενων περιοχών. Η εφαρμογή των ακουστικών δεικτών στο Εθνικό Πάρκο Σαμαριάς – Λευκά Όρη». Ανάρτηση (Ποστερ) "Διαχείριση και Διατήρηση των Προστατευόμενων Περιοχών στην Ελλάδα" Οργανισμός Φυσικού Περιβάλλοντος & Κλιματικής Αλλαγής (Ο.ΦΥ.ΠΕ.Κ.Α.) 25-26 Οκτωβρίου 2023, Χανιά
- [3] Άρθρο σε περιοδικό του ΕΛΚΕ ΤΕΙ Κρήτης: **Αλεξανδράκη Χ.** (2011) «Η τεχνολογία της Δικτυακής Μουσικής Εκτέλεσης και η Ανάπτυξή της στο ΤΕΙ Κρήτης – Μέρος Α'», *Περιοδικό «Ενημέρωση στην εκπαίδευση, έρευνα και καινοτομία»*, ΕΛΚΕ ΤΕΙ Κρήτης, τεύχος 5, σελ. 60-65
- [4] Άρθρο σε περιοδικό του ΕΛΚΕ ΤΕΙ Κρήτης: **Αλεξανδράκη Χ.**, Ακουμιανάκης Δ. (2011) «Η τεχνολογία της Δικτυακής Μουσικής Εκτέλεσης και η Ανάπτυξή της στο ΤΕΙ Κρήτης – Μέρος Β'», *Περιοδικό «Ενημέρωση στην εκπαίδευση, έρευνα και καινοτομία»*, ΕΛΚΕ ΤΕΙ Κρήτης, τεύχος 6, σελ. 49-58
- [5] Παρουσίαση ως προσκεκλημένη ομιλήτρια σε συνέδριο: **Alexandraki C.** (2009) “A Note on Semantically Informed Networked Music Performances”, *Music in the Global Village 2009 Conference Notes*, December 2009, Budapest, Hungary.
- [6] Παρουσίαση σε συνέδριο με κρίση περίληψης: Τζεδάκη Κ., **Αλεξανδράκη Χ.**, Κουτλεμάνης Π., Γαστεράτος Π., «Σύνθεση live ηλεκτροακουστικής μουσικής με χρήση δικτυακά διασυνδεδεμένων ηχοτοπίων: Αισθητικά και τεχνικά θέματα», *1ο Συνέδριο Ακουστικής Οικολογίας*, Κέρκυρα, Νοέμβριος 2007