Sertan Şentürk

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Objective

I pursue a career in data science and machine learning engineering, and specializing in MLOps, music information retrieval, audio signal processing, and machine learning. As a part of my endeavors, I aim to develop novel solutions for the automatic description, retrieval and discovery of big music data.

Interests

- Data Science and Machine Learning Engineering
    - Data and machine learning product design, development
    - MLOps
    - Big Data
    - Reproducible Research

- Music Information Retrieval, Audio Signal Processing & Machine Learning
    - Automatic description and summarization of music data
    - Music discovery
    - Audio-score alignment
    - Predictive music modeling and music generation

- Semantic Web & Natural Language Processing
    - Entity Recognition
    - Knowledge Graphs, Linked Data and Ontologies

- Interactive Music
    - Novel instrument and interface design

Work & Research Experience

- **Deliveroo (Roofoods Ltd.)** — London, UK
  Senior ML Engineer - ML Platform — *Aug 2022 – ongoing*
    - ML experiment deployment
    - ML observability

- **Kidsloop** — London, UK
  Senior ML Engineer - Audio — *May 2022 – Aug 2022*
    - Assisted audio researchers to productize their work

- **Kobalt Music Group Ltd.** — London, UK
  Lead Data Scientist - Research & Development — *Jul 2019 – May 2022*
  Senior Data Scientist - Research & Development — *Jan 2018 – Jun 2019*
    - Entity recognition on semi-structured data (aka. metadata matching)
    - Knowledge graphs for music metadata
    - Support teams across the company with data-driven solutions

- **NYU Abu Dhabi, Music and Sound Cultures Research Group** — Abu Dhabi, UAE
  Data Science Consultant, group director Carlos Guedes — *Jun 2019 – ongoing*
    - Support the research group on their data-driven projects applied to the music of the Gulf region

- Development of computational methods for automatic music transcription and music similarity

- **SoundCloud Ltd.** — Berlin, GERMANY
  Senior Data Scientist — *Jun 2017 – Aug 2017*
  - Audio Fingerprinting

- **Universitat Pompeu Fabra, Music Technology Group** — Barcelona, SPAIN
  Researcher in CompMusic Project, advisor Xavier Serra — *Sep 2011 – May 2017*
  - Computational analysis of audio recordings and music scores for the description and discovery of Ottoman-Turkish makam music
  - Computational analysis Hindustani and Carnatic music
  - Dunya: A tool for the analysis and discovery of Ottoman-Turkish makam music
  - Joint Tonic Identification and Mode Recognition

- **BAU, Department of Electrical and Electronics Engineering** — Istanbul, TURKEY
  Erasmus+ Visiting Researcher, supervisors Andre Holzapfel, Barış Bozkurt — *Apr 2014 – Jun 2014*
  - Audio-Score Alignment

- **Georgia Tech Center for Music Technology** — Atlanta, GA, USA
  Graduate Research Assistant, supervisor Parag Chordia — *Aug 2009 – Aug 2011*
  - Predictive Music Modeling
  - Joint Tonic Identification and Mode Recognition

- **METU Department of Electrical and Electronics Engineering** — Ankara, TURKEY
  Undergraduate Researcher, supervisor Tolga Çiloğlu — *Sep 2008 – Jun 2009*
  - Incorporation of Visual Information in Automatic Speech Segmentation

- **METU Department of Mechanical Engineering** — Ankara, TURKEY
  Undergraduate Researcher, supervisor Filiz Bal Koçyiğit — *Oct 2007 – Jun 2008*
  - Sound and Noise Control in Hospitals
  - Acoustics in the Partial Deaf Student School Music Classrooms
  - Predicting the Acoustics of Historic Istanbul Tunnel

- **Arçelik A.Ş. Vibration and Acoustics Laboratory** — Istanbul, TURKEY
  Intern — *Jun 2007 – Jul 2007*
  - Active Noise Control

- **Karel R&D A.Ş.** — Ankara, TURKEY
  Intern — *Jul 2006 – Aug 2006*
  - Basics of telecommunication and network programming
  - Implemented a test program for DS10 PABX.

- **Alp Turac Music Studio** — Istanbul, TURKEY
  Recording & Mixing Assistant — *Jun 2006 – Jul 2006*
  - Basics of music recording & mixing
  - Worked during the recording of *Malt – Kendi Adını Taşıyan İlk Albüm*

- **Renko A.Ş.** — Istanbul, TURKEY
  Part-Time Researcher — *Jul 2005 – Aug 2005*
  - Research in acoustic experiment sets in the commercial market

- **Classical Guitar Instructor** — Ankara, TURKEY
  Self-Employed — *Sep 2005 – Jun 2009*
  - Beginner to intermediate level teaching

Education

- **Universitat Pompeu Fabra (UPF)** — Barcelona, SPAIN
  Ph.D. in Information, Communication and Audiovisual Technologies — *Sep 2011 – Dec 2016*

- Researcher in the CompMusic Project
- Teaching assistant in the course Signals & Systems (MTC.21409)

- **Georgia Institute of Technology (Georgia Tech)** — Atlanta, GA, USA
  MSc. in Music Technology; GPA: 3.64/4.00 — *Aug 2009 – Dec 2011*
  - Graduate Research Assistant in the Music Intelligence Group
  - Key Courses: Computational Music and Audio Analysis, Digital Signal Processing - Music, Music Technology Research Lab, Interactive Music, Music Perception & Cognition, Sensation & Perception, Technology Ensemble, Project Studio - Music Technology, Computer Music Composition, Music Technology History & Repertoire, Network Music, Music Recording & Mixing

- **Middle East Technical University (METU)** — Ankara, TURKEY
  BSc. in Electrical And Electronics Engineering; GPA: 3.13/4.00 — *Sep 2004 – Jun 2009*
  - Honor Student
  - Graduated from Control Engineering Option
  - Key Courses: Digital Signal Processing, Discrete Time Systems, Signals and Systems I-II, Probability and Random Variables, Feedback Systems, Computational Methods in Electrical Engineering, Data Structures, Introduction to Microprocessors, Digital Electronics, Introduction to Logic Design, Analog Electronics, Engineering Design I-II

- **Hacettepe University Ankara State Conservatory** — Ankara, TURKEY
  Certificate of Achievement in Classical Guitar; GPA: 87.75/100 — *Sep 2005 – Jun 2009*
  - Four-year, part-time program
  - Courses: Classical Guitar, Solfège & Music Theory

- **Ankara Atatürk Anatolian High School** — Ankara, TURKEY
  High School Diploma; GPA: 5.00/5.00 — *Sep 2001 – Jun 2004*

Skills

Programming Languages: Python, Scala, C/C++, SQL, MATLAB Scripting, R, Java, Shell Scripting

Programming Skills: cloud computing, containerization, version control, test driven development, continous integration and development, code coverage, trunk-based development, object oriented programming, semantic versioning

Project Management: Agile, Scrum, Kanban, user story mapping, Jira, Trello

Libraries: Spark, scikit-learn, TensorFlow, pyTorch, pandas, seaborn, Essentia, librosa

Software Development Services: GitHub, Circle CI, GitHub Actions, Bitbucket, Travis CI, Bamboo, Artifactory

Cloud Computing (AWS): EMR, Sagemaker, ECS, Athena, Glue, Batch, RDS, step functions, lambda, terraform

Software Tools: ElasticSearch, Jupyter, Docker, MATLAB

k8s, Argo workflows, Argo CD

Visual Studio Code, PyCharm, IntelliJ

Max/MSP, PD-extended, Pro Tools, Sonic Visualizer, Finale, MuseScore, Mus2, Humdrum

FMOD, openframeworks, ReacTIVision

Wordpress, Inkscape, LaTeX

Operating Systems: Ubuntu, Debian, Mac OS X, Windows

Diagram Creation Tools: Miro, LucidChart

Languages: Turkish (native), English (fluent), Spanish (upper-intermediate), German (pre-intermediate), Catalan (beginner)

Musical: Classical guitar, fretless guitar, Western classical music theory and analysis

Technical: Sound equipment set-up and usage; electronic circuit design, test and implementation

Publications

[1] Kaustuv Kanti Ganguli, Sertan Şentürk, and Carlos Guedes. Critiquing task-versus goal-oriented approaches: A case for makam recognition. In *Proceedings of 23th International Society for Music Information Retrieval Conference (ISMIR 2022)*, Bengaluru, India, 2022.

[2] Kaustuv Kanti Ganguli, Christos Plachouras, Sertan Şentürk, Andrew Eisenberg, and Carlos Guedes. Mapping timbre space in regional music collections using HPSS decomposition. In *Proceedings of 2nd International Conference on Timbre (Timbre 2020)*, pages 65–68, Thessaloniki, Greece, 2020. Aristotle University of Thessaloniki.

[3] Kaustuv Kanti Ganguli, Sertan Şentürk, Andrew Eisenberg, and Carlos Guedes. Computational approaches to aid ethnographic research on Maqam melodies [abstract]. In *Proceedings of 1st Symposium of the International Council for Traditional Music Study Group on Sound, Movement, and the Sciences (SoMoS 2020)*, Stockholm, Sweden, 2020. KTH Royal Institute of Technology.

[4] Hasan Sercan Atlı, Sertan Şentürk, Barış Bozkurt, and Xavier Serra. Synthesis of Turkish makam music scores using an adaptive tuning approach. In *Proceedings of 6th International Workshop on Folk Music Analysis (FMA 2017)*, pages 66–71, Málaga, Spain, 2017. Universidad de Málaga.

[5] Sertan Şentürk. *Computational Analysis of Audio Recordings and Music Scores for the Description and Discovery of Ottoman-Turkish Makam Music*. PhD thesis, Universitat Pompeu Fabra, Barcelona, Spain, December 2016.

[6] Georgi Dzhambazov, Ajay Srinivasamurthy, Sertan Şentürk, and Xavier Serra. On the use of note onsets for improved lyrics-to-audio alignment in Turkish makam music. In *Proceedings of 17th International Society for Music Information Retrieval Conference (ISMIR 2016)*, pages 716–722, New York, NY, USA, 2016.

[7] Sankalp Gulati, Joan Serrà, Kaustuv K. Ganguli, Sertan Şentürk, and Xavier Serra. Time-delayed melody surfaces for rāga recognition. In *Proceedings of 17th International Society for Music Information Retrieval Conference (ISMIR 2016)*, pages 751–757, New York, NY, USA, 2016.

[8] Sankalp Gulati, Joan Serrà, Vignesh Ishwar, Sertan Şentürk, and Xavier Serra. Phrase-based rāga recognition using vector space modeling. In *Proceedings of 41st IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP 2016)*, pages 66–70, Shanghai, China, 2016. IEEE, IEEE.

[9] Altuğ Karakurt, Sertan Şentürk, and Xavier Serra. MORTY: A toolbox for mode recognition and tonic identification. In *Proceedings of the 3rd International Digital Libraries for Musicology Workshop (DLfM 2016)*, pages 9–16, New York, NY, USA, 2016. ACM.

[10] Sertan Şentürk, Gopala Krishna Koduri, and Xavier Serra. A score-informed computational description of svaras using a statistical model. In *Proceedings of 13th Sound and Music Computing Conference (SMC 2016)*, pages 427–433, Hamburg, Germany, 2016. Zentrum für Mikrotonale Musik und Multimediale Komposition (ZM4) Hochschule für Musik und Theater.

[11] Sertan Şentürk and Xavier Serra. Composition identification in Ottoman-Turkish makam music using transposition-invariant partial audio-score alignment. In *Proceedings of 13th Sound and Music Computing Conference (SMC 2016)*, pages 434–441, Hamburg, Germany, 2016. Zentrum für Mikrotonale Musik und Multimediale Komposition (ZM4) Hochschule für Musik und Theater.

[12] Sertan Şentürk and Xavier Serra. A method for structural analysis of Ottoman-Turkish makam music scores. In *Proceedings of 6th International Workshop on Folk Music Analysis (FMA 2016)*, pages 39–46, Dublin, Ireland, 2016. Dublin Institute of Technology.

[13] Bilge Miraç Atıcı, Barış Bozkurt, and Sertan Şentürk. A culture-specific analysis software for makam music traditions. In *Proceedings of 5th International Workshop on Folk Music Analysis (FMA 2015)*, pages 88–92, Paris, France, 2015. University Pierre et Marie Curie.

[14] Hasan Sercan Atlı, Barış Bozkurt, and Sertan Şentürk. A method for tonic frequency identification of Turkish makam music recordings. In *Proceedings of 5th International Workshop on Folk Music Analysis (FMA 2015)*, pages 119–122, Paris, France, 2015. University Pierre et Marie Curie.

[15] Georgi Dzhambazov, Sertan Şentürk, and Xavier Serra. Searching lyrical phrases in a-capella Turkish makam recordings. In Meinard Müller and Frans Wiering, editors, *Proceedings of 16th International Society for Music Information Retrieval Conference (ISMIR 2015)*, pages 687–693, Málaga, Spain, 2015.

[16] André Holzapfel, Umut Şimşekli, Sertan Şentürk, and Ali Taylan Cemgil. Section-level modeling of musical audio for linking performances to scores in Turkish makam music. In *Proceedings of 40th IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP 2015)*, pages 141–145, Brisbane, Australia, 2015. IEEE.

[17] Sertan Şentürk, Andrés Ferraro, Alastair Porter, and Xavier Serra. A tool for the analysis and discovery of Ottoman-Turkish makam music. In Meinard Müller and Frans Wiering, editors, *Extended Abstracts for the Late Breaking Demo Session of the 16th International Society for Music Information Retrieval Conference (ISMIR 2015)*, Málaga, Spain, 2015.

[18] Hasan Sercan Atlı, Burak Uyar, Sertan Şentürk, Barış Bozkurt, and Xavier Serra. Audio feature extraction for exploring Turkish makam music. In *Proceedings of 3rd International Conference on Audio Technologies for Music and Media (ATMM 2014)*, Ankara, Turkey, 2014. Bilkent University, Bilkent University.

[19] Georgi Dzhambazov, Sertan Şentürk, and Xavier Serra. Automatic lyrics-to-audio alignment in classical Turkish music. In André Holzapfel, editor, *Proceedings of 4th International Workshop on Folk Music Analysis (FMA 2014)*, pages 61–64, Istanbul, Turkey, 2014. Computer Engineering Department, Boğaziçi University.

[20] Sertan Şentürk, Sankalp Gulati, and Xavier Serra. Towards alignment of score and audio recordings of Ottoman-Turkish makam music. In André Holzapfel, editor, *Proceedings of 4th International Workshop on Folk Music Analysis (FMA 2014)*, pages 57–60, Istanbul, Turkey, 2014. Computer Engineering Department, Boğaziçi University.

[21] Sertan Şentürk, André Holzapfel, and Xavier Serra. Linking scores and audio recordings in makam music of Turkey. *Journal of New Music Research*, 43(1):34–52, 2014.

[22] Burak Uyar, Hasan Sercan Atlı, Sertan Şentürk, Barış Bozkurt, and Xavier Serra. A corpus for computational research of Turkish makam music. In *Proceedings of the 1st International Digital Libraries for Musicology Workshop (DLfM 2014)*, pages 57–63, London, United Kingdom, 2014.

[23] Parag Chordia and Sertan Şentürk. Joint recognition of raag and tonic in north Indian music. *Computer Music Journal*, 37(3):82–98, 2013.

[24] Sertan Şentürk. Sesin özgürleşmesi: Müzik prodüksiyonu teknolojileri. *Birikim Dergisi*, 285:98–104, 2013.

[25] Sertan Şentürk, Sankalp Gulati, and Xavier Serra. Score informed tonic identification for makam music of Turkey. In Alceu de Souza Britto Jr., Fabien Gouyon, and Simon Dixon, editors, *Proceedings of 14th International Society for Music Information Retrieval Conference (ISMIR 2013)*, pages 175–180, Curitiba, Brazil, 2013. Pontifícia Universidade Católica do Paraná.

[26] Sertan Şentürk, André Holzapfel, and Xavier Serra. An approach for linking score and audio recordings in makam music of Turkey. In Xavier Serra, Preeti Rao, Hema Murty, and Barış Bozkurt, editors, *Proceedings of 2nd CompMusic Workshop*, pages 95–106, Istanbul, Turkey, 2012. Universitat Pompeu Fabra.

[27] Sertan Şentürk, Sang Won Lee, Avinash Sastry, Anosh Daruwalla, and Gil Weinberg. Crossole: A gestural interface for composition, improvisation and performance using Kinect. In Georg Essl, Brent Gillespie, Michael Gurevich, and S O'Modhrain, editors, *Proceedings of International Conference on New Interfaces for Musical Expression (NIME 2012)*, pages 449–502, Ann Arbor, MI, USA, 2012. University of Michigan, University of Michigan.

[28] Mohamed Sordo, Gopala Krishna Koduri, Sertan Şentürk, Sankalp Gulati, and Xavier Serra. A musically aware system for browsing and interacting with audio music collections. In Xavier Serra, Preeti Rao, Hema Murty, and Barış Bozkurt, editors, *Proceedings of 2nd CompMusic Workshop*, pages 20–24, Istanbul, Turkey, 2012. Universitat Pompeu Fabra.

[29] Aaron Albin, Sertan Şentürk, Akito Van Troyer, Brian Blosser, Oliver Jan, and Gil Weinberg. Beatscape, a mixed virtual-physical environment for musical ensembles. In Alexander Refsum Jensenius, Anders Tveit, Rolf Inge Godøy, and Dan Overholt, editors, *Proceedings of International Conference on New Interfaces for Musical Expression (NIME 2011)*, pages 112–115, Oslo, Norway, 2011. University of Oslo and Norwegian Academy of Music.

[30] Parag Chordia, Avinash Sastry, and Sertan Şentürk. Predictive tabla modelling using variable-length Markov and hidden Markov models. *Journal of New Music Research*, 40(2):105–118, 2011.

[31] Sertan Şentürk. Computational modeling of improvisation in Turkish folk music using variable-length Markov models. Master's thesis, Georgia Institute of Technology, Atlanta, 2011.

[32] Sertan Şentürk. Interactivity in contemporary dance and music. Self Published, 2011.

[33] Sertan Şentürk and Parag Chordia. Modeling melodic improvisation in Turkish folk music using variable-length Markov models. In *Proceedings of 12th International Society for Music Information Retrieval Conference (ISMIR 2011)*, pages 269–274, Miami, FL, USA, 2011.

[34] Filiz Bal Kocyigit and Sertan Şentürk. Acoustics in the partial deaf student school music classrooms. In *Proceedings of Acoustics'08 Paris Conference*, pages 3919–3924, Paris, France, 2008. Société Française d'Acoustique.

Teaching

- **Universitat Pompeu Fabra**   Sep 2012 – July 2015
  Signals and Systems (Course code: MTC.21409)   *Barcelona, SPAIN*
    – Laboratory Coordinator in 2015
    – Laboratory Instructor between 2012 and 2015
    – Seminar Instructor in 2013

Funding and Distinctions

- **Ph.D. Fellowship**   Sep 2012 – Sep 2016
  Universitat Pompeu Fabra   *Barcelona, SPAIN*
- **Computational models for the discovery of the world's music**   Sep 2011 – Sep 2016
  Grant agreement 267583 (CompMusic)   *Barcelona, SPAIN*
    – Funding agency: European Research Council
    – Funded within European Union Seventh Framework Program (FP7/2007-2013)
    – General Principal Investigator: Xavier Serra

- – Partially funded the Ph.D. research

- **Modeling Musical Creativity**   Aug 2009 – Aug 2011
  Award IIS-0855758   *Atlanta, GA, USA*
  - – Full Title: Modeling Musical Improvisation to Support Creativity in Education and Performance
  - – Funding Agency: National Science Foundation
  - – Principal Investigator: Parag Chordia
  - – Partially funded the graduate research

- **Incorporation of Visual Info. in Automatic Speech Segmentation**   Sep 2008 – Jun 2009
  Project 107E101   *Ankara, TURKEY*
  - – Funding Agency: Scientific and Technological Research Council of Turkey (TÜBİTAK)
  - – Principal Investigator: Tolga Çiloğlu
  - – Worked as an undergraduate researcher

- **Highlighted Reviewer**   2022
  Tenth International Conference on Learning Representations (ICLR)   *Virtual*

- **Top 10% of high-scoring reviewers**   2020
  34th Conference on Neural Information Processing Systems (NeurIPS)   *Virtual*

- **Most Active Conference Attendee**   2020
  21st International Society for Music Information Retrieval Conference (ISMIR)   *Virtual*

Certificates

- **Introduction to Machine Learning in Production**   Jul 2021
  Certificate   *deeplearning.ai, Coursera*

- **Deep Learning Specialization**   Mar 2020
  Certificate   *deeplearning.ai, Coursera*

- **Sequence Models**   Mar 2020
  Certificate   *deeplearning.ai, Coursera*

- **Convolutional Neural Networks**   Jun 2018
  Certificate   *deeplearning.ai, Coursera*

- **Structuring Machine Learning Projects**   Sep 2017
  Certificate   *deeplearning.ai, Coursera*

- **Improving Deep Neural Networks**   Sep 2017
  Hyperparameter Tuning, Regularization and Optimization; Certificate   *deeplearning.ai, Coursera*

- **Neural Networks and Deep Learning**   Aug 2017
  Certificate   *deeplearning.ai, Coursera*

Selected Projects

- **Computational Analysis of Ottoman-Turkish Makam Music**   2011 – 2016
  Doctoral Research   *Universitat Pompeu Fabra*
  - – Methodologies designed to analyze the audio recordings and music scores of Ottoman-Turkish makam music for automatic description and music discovery
  - – Open source toolbox is available at https://github.com/sertansenturk/tomato.
  - – Outcomes are available at https://dunya.compmusic.upf.edu/makam/.
  - – Related papers: [4, 5, 9, 10, 11, 12, 14, 16, 17, 18, 20, 21, 25, 22, 26, 28] in **Publications**
  - – Funded by the European Research Council under the European Union Seventh Framework Program (FP7/2007-2013) / ERC grant agreement 267583.
  - – Responsibilities: Set music score and audio corpora, propose culture-aware methodologies to analyse the melodic, structural, rhythmic and lyrics content of the music scores and audio recordings, implement the algorithms in a modular and easy-to-use toolbox

- **Computationally-Engaged Appr. to Rhythm and Musical Heritage**   2019 – ongoing
  Data Science Consultancy to Music and Sound Cultures Research Group   *NYU Abu Dhabi*
  - Development and experimentation of automatic music transcription methodologies
  - Using automatic transcription to discover similarities between Indian, East African, Gulf and Turkish music
  - Devise interactions with the digital music compendium

- **Automatic Music Description and Discovery**   2011 – 2017
  Doctoral Research   *Universitat Pompeu Fabra*
  - Creation of representative music corpora and development of relevant software tools for corpus-based automatic music description and discovery
  - The web application may be visited at http://dunya.compmusic.upf.edu/makam/.
  - Related papers: [4, 17, 18, 22, 28] in **Publications**
  - Funded by the European Research Council under the European Union Seventh Framework Program (FP7/2007-2013) / ERC grant agreement 267583.
  - Responsibilities: Set up the CompMusic makam music corpora, deploy the implementations of the automatic analysis methodologies, assist in developing the culture-specific user interaction

- **Audio-Score Alignment**   2012 –
  Doctoral Research   *Universitat Pompeu Fabra*
  - Audio-score alignment methodologies designed to handle culture-specific characteristics of the studied musics
  - Related papers: [5, 10, 11, 16, 17, 18, 20, 21, 22, 25, 26] in **Publications**
  - Funded by the European Research Council under the European Union Seventh Framework Program (FP7/2007-2013) / ERC grant agreement 267583.
  - Responsibilities: Set up and annotate the score-audio test datasets, develop section-level and note-level alignment methodologies robust to changes in structure, transposition, tuning and intonation

- **Predictive Music Modeling**   2011 – 2013
  Graduate Assistantship Research, Masters Thesis   *Georgia Tech*
  - Computational modeling of *uzun hava*, a non-metered improvisational melodic structure in Turkish folk music
  - Computational modeling of tabla (a sophisticated North Indian percussion) performances with Avinash Sastry
  - Related papers: [30, 31, 33] in **Publications**
  - Responsibilities: Creating datasets from symbolic notations, automatic segmentation, feature extraction, class conditional probability calculation and classification by naive multivariate Gaussian distributions, multiple viewpoints modeling

- **Joint Mode Recognition and Tonic Identification**   2010, 2016
  Doctoral and Masters Research   *Georgia Tech, Universitat Pompeu Fabra*
  - Realised a state-of-art system that is able to recognise tonic and mode of Ottoman-Turkish makam, Hindustani and Carnatic music recordings jointly from pitch distributions in a fully automatic way and with very high precision
  - An open source toolbox is available https://github.com/altugkarakurt/morty.
  - Related papers: [9, 23] in **Publications**
  - Funded by NSF CreativeIT Grant, Award #0855758 and by the European Research Council under the European Union Seventh Framework Program (FP7/2007-2013), ERC grant agreement 267583
  - Responsibilities: Pitch tracking in GTRaagDB, pitch distribution calculations, tonic candidate selection algorithms, joint tonic and raag recognition using different parametric and non-parametric methods

- **Crossole**   2011
  A Musical Interface Designed in the Course, Project Studio   *Georgia Tech*
  - A musical interface by which humans and possibly the machine itself performs a musical structure by creating and controlling musical progressions in real time in a virtual environment with hand gestures.
  - Related papers: [27] in **Publications**
  - Performed at the Atlanta Maker Faire 2011; 10 September 2011; Atlanta, GA, USA and the Listening Machines 2011; April 2011; Atlanta, GA, USA
  - Finalist in the Innovation Competition of GTRIC 2012
  - Responsibilities: Audio framework and software development in C++

- **Ottoman-Turkish Makam Music Ontologies**   2015 – 2017
  Doctoral Research   *Universitat Pompeu Fabra*

- Ontologies describing the concepts in Ottoman-Turkish makam music from music scores to melodic structures and performance interactions
- The ontologies are available at https://github.com/sertansenturk/makam-ontologies.
- Funded by the European Research Council under the European Union Seventh Framework Program (FP7/2007-2013) / ERC grant agreement 267583.
- Responsibilities: Infer the concepts from CompMusic makam music corpora, music theory knowledge and metadata in MusicBrainz, construct the ontologies

- **Beatscape** 2010
  Instrument Built in the Course, Technology Ensemble *Georgia Tech*
  - A Mixed Virtual-Physical Environment for Musical Ensembles, with Aaron Albin, Brian Blosser, Oliver Jan and Akito Van Troyer
  - Related papers: [29] in **Publications**
  - Performed at the *FutureMedia Fest*; 5 October 2010; Atlanta, GA, USA and the *Listening Machines 2010*; 17 April 2010; Eyedrum, Atlanta, GA, USA
  - Responsibilities: Physical set-up of the instrument, image detection via Reactivision framework, data communication between Reactivision and the main software, audio playback

- **Bayan Sound Modelling and Synthesis** 2009 – 2010
  Graduate Assistantship Research *Georgia Tech*
  - Mathematical modelling the sounds produced by a bayan drum and synthesising them in real-time
  - Funded by NSF CreativeIT Grant, Award #0855758
  - Responsibilities: Tabla Segmentation, analysis of segments, parameter estimation, mathematical modelling from parameters, building python external and adding relevant control structures in puredata for real-time synthesis from the model

- **Urban Remix** 2009
  A Locative Sound Project Designed in the Course, Network Music *Georgia Tech*
  - A collaborative and locative sound project
  - Audio Team with Aaron Albin and Avinash Sastry
  - Responsibilities: Experimented with different sound generation software, optimised sound generation time, designed a sound rendering system that gives the feeling of localisation and distance of the sound sources which are consistent to the paths that are drawn by the user, audio post-processing for clippings and normalisation

- **Incorporation of Visual Information in Automatic Speech Segmentation** Jun 2009
  Doctoral Research of Eren Akdemir, Ph.D. *METU*
  - Speech segmentation developed to incorporate the visual information captured around the mouth region
  - Funded by Tubitak Support Program for Scientific and Technological Research Projects #107E101
  - Responsibilities: Manual segmentation of a Turkish speech database with more than forty thousand phonemes, additional segmentation for cross-validation with another participant, error checking in segmentation data and maintenance in the speech database

Invited Talks and Seminars

- **Machine Learning: A Short Intro** Mar 2021
  KTech *London, UK*
  - Engineering Community of Practice Talk given as part of the company learning and development efforts
  - The slides are available on the personal website.

- **Müzik Bilgi Erişimi Teknolojileri ve Uygulama Alanları** Feb 2021
  Bahçeşehir University *Istanbul, TURKEY*
  - English Title: Music Information Retrieval Technologies and Applications
  - Invited seminar given as part of the Digital Signal Processing graduate course
  - The slides are available on Google Slides.

- **Working in the (Music) Industry: A Personal Experience** Jul 2020
  Queen Mary University of London *London, UK*
  - Invited talk given as part of the UKRI CDT-AIM doctoral training seminars.

- **Metadata problems in the music industry** — Sep 2019
  [Berlin Music Information Retrieval Meetup](#) — *Berlin, GERMANY*
  - Presented numerous metadata-related problems in the music industry, and solutions to match music metadata.
  - The slides are available on the personal website.

- **Music metadata matching using Elasticsearch** — May 2019
  [Elastic London User Group Meetup](#) — *London, UK*
  - Hosted the event in the Kobalt Music London office.
  - The slides of the talk are available at the personal website.

- **What is Machine Learning?** — Jul 2018
  Kobalt Music Group — *London, UK*
  - Lunch N Learn talk given as part of the company learning and development efforts
  - The slides are available on the personal website.

- **Music Information Retrieval: Applications and the State-of-the-Art** — Dec 2017
  Middle East Technical University — *Ankara, TURKEY*
  - Seminar given as part of the "Multimedia Informatics - Research Methods" course in the Graduate School of Informatics.
  - The slides are available on Google Slides.

- **Why Reproducibility Matters? A Personal Experience** — Feb 2017
  Universitat Pompeu Fabra — *Barcelona, SPAIN*
  - Talk given within the scope of the Maria de Maeztu Strategic Research Program. Presented the importance of reproducibility in academic research, which I had learned by experience throughout my academic studies. Provided guidelines and best-practices for conducting reproducible research.
  - The slides are available on https://zenodo.org/record/255537.

- **Culture specific approaches in music technology: Turkish Music Case** — Feb 2016
  Multiple Universities — *TURKEY*
  - Main speaker in a series of seminars showcasing the technologies developed within the CompMusic Project.
  - Took place in *Istanbul Technical University State Conservatory, Yıldız Technical University State Conservatory, Yıldırım Beyazıt University State Conservatory, Boğaziçi University Deparment of Computer Engineering, Middle East Technical University Informatics Institute* and *Bilkent University Department of Electrical and Electronics Engineering.*

- **Symbolic analysis of Ottoman-Turkish makam music** — Jun 2015
  University of the Basque Country — *San Sebastian, SPAIN*
  - Invited talk. Presented an overview of the state-of-the-art and possible extensions for music transformation
  - The slides are available on the personal website.

- **Otomatik nota-icra eşleştirme (Audio-score alignment)** — Jun 2014
  Istanbul Technical University State Conservatory — *Istanbul, TURKEY*
  - Invited talk in the seminar "Ses teknolojisinde Türk Müziği'ne özgü tasarımlar"

- **Galata Electroacoustic Orchestra** — Jul 2013
  Conservatorio Niccolò Paganini di Genova — *Genoa, ITALY*
  - Taught two lessons titled "Pitch analysis of traditional Turkish music" and "Information processing techniques applied to traditional Turkish music" (Erasmus Intensive Program (IP) No: 2012-1-IT2-ERA10-38878)

Supervision and Mentoring

- **[Women in MIR](#)** — Jan 2017 – ongoing
  - Mentor

- **Georgia Tech Music Technology Mentorship** — Sep 2018 – June 2019
  - Alumni outreach chair

- **Halil Erdoğan** — March 2018 – ongoing
  R&D Engineer, [Aiva Technologies](#); Researcher, [Fraunhofer Institute](#)

- – Automatic music generation
- – Research methodologies, reproducibility, and software development

- **Aslı Ateş**   May 2018 – ongoing
  Ph.D. Student & Researcher, University of Sussex
  - – Metadata matching, data-driven sustainable development

- **Hasan Sercan Atlı**   Jun 2014 – ongoing
  Software & QA Engineer, Avid Technology
  - – Currently: Music industry, software development management, user analytics
  - – Development of a modular, extensive and customizable desktop application for accessing and visualizing the music information sources, the features and the analysis results. The source code is available at https://github.com/MTG/dunya-desktop.
  - – CompMusic makam music corpus [22]
  - – Melody extraction for Ottoman-Turkish makam music recordings [18]
  - – Tonic identification methodology proposed in [14]
  - – The works listed above are included in his master thesis titled "An interactive tuition software for the melodic dimension of Turkish makam music." The software was awarded with the "silver" prize in the student design competition of 139th *Audio Engineering Society Convention, NY, USA (2015).*
  - – Introduced the fundamentals of academic writing, object oriented programming, version control, code coverage, continous integration

- **Aaron Breuer Weil**   Mar 2020 – ongoing
  Data Scientist, Capgemini
  - – Data Science foundations, career coaching

- **Burak Uyar**   Jun 2014 – Mar 2016, Apr 2019 – ongoing
  Chief Information Officer, Scoutium
  - – Currently: Data and machine learning product development and deployment, business-driven data science
  - – CompMusic makam music corpus [22].
  - – Tools to generate MusicXML scores from the SymbTr makam music score collection. The open converter is hosted at https://github.com/burakuyar/MusicXMLConverter/.

- **Miraç Atıcı**   Feb 2015 – Mar 2016, Jun 2020 – ongoing
  Senior AI Product Engineer, Presidency of Turkey
  - – Currently: MLOps, cloud computing, architecture design
  - – Fundamentals of academic writing, object oriented programming and Python

- **Fei Phoon**   Jan 2019 – ongoing
  Data Engineer, Zoopla; MSc. student, City University of London
  - – Data Science foundations, research methodologies, data preparation and exploration, experimentation, machine learning model training, evaluation, knowledge graphs

- **Gustaf Ahdritz**   June 2019 – August 2019
  BSc. in Columbia University
  - – Data science internship
  - – Metadata matching

- **Altuğ Karakurt**   Jun 2015 – Jan 2017
  Ph.D. Student & Researcher; University of Colorado Boulder
  - – Automatic mode recognition and tonic identification [9]. An open source toolbox implementing the methodology is hosted at https://github.com/altugkarakurt/morty/.

Scientific Services

- Industry & Sponsorship Co-Chair
  - – International Society for Music Information Retrieval Conference   2021

- Advisory Committee

-     – Modus Operandi   2015 − 2017
- Programme Committee
  - International Conference on Digital Libraries for Musicology (DLfM)   2017 – ongoing
  - Digital Audio Effects Conference (DAFx)   2020 – ongoing
- Journal Referee
  - Applied Sciences   2017
  - Journal of New Music Research (JNMR)   2013
- Expert/Meta-Reviewer
  - International Conference on Machine Learning (ICML)   2021 – ongoing
- Conference Reviewer
  - International Society for Music Information Retrieval Conference (ISMIR)   2014 – ongoing
  - Annual Conference on Neural Information Processing Systems (NeurIPS)   2019 – ongoing
  - International Conference on Learning Representations (ICLR)   2021 – ongoing
  - Sound and Music Computing Conference (SMC)   2013, 2014, 2016, 2018
  - International Computer Music Conference (ICMC)   2014
  - Iberoamerican Congress on Pattern Recognition (CIARP)   2014

Organization Experience

- **London Audio and Music AI Meetup**   2020 – ongoing
  Vibrant London community with an interest in audio and music applications   *London, UK*
  - Co-organizer
  - Identify speakers, organize meetups, liasise hosts and sponsors

- **International Society for Music Information Retrieval Conference**   Nov 2021
  Leading research forum on processing, searching, organising and accessing music data   *Virtual*
  - Industry and Sponsorship Co-Chair
  - Organize industry talks & masterclasses; liaise industry sponsorship

- **Kobalt Hackathlon**   Sep 2019
  Two-day hacking session to drive in-house innovation in Kobalt Music   *London, UK*
  - Member of organization committee
  - Advised the committee based on previous hack day organization experience. Directed the presentation session.

- **Barcelona Music Hack Day**   Jul 2012 & Jul 2013
  One-day hacking session to realise any music related idea   *Barcelona, SPAIN*
  - Volunteer in Sónar 2012 - 2013

- **Sonic Generator Concert Series**   Aug 2009 – May 2011
  Ensemble-in-Residence at Georgia Institute of Technology   *Atlanta, GA, USA*
  - Stage crew, video recording, set-up assistance

- **Guthman Musical Instrument Competition**   Feb 2010 & Feb 2011
  Hosted by the Georgia Tech Center for Music Technology   *Atlanta, GA, USA*
  - Set-up assistance and supervision

- **METU International Classical Guitar Festival**   Mar 2006 & Mar 2007
  Organised by METU Classical Guitar Society   *Ankara, TURKEY*
  - Sound recording, set-up assistance

Compositions and Sound Design

- **A Reproduction of La Espiral Eterna**   Mar 2011; Revised Dec 2011

  Classical Guitar, Signal Processing & Organised Sound

  > *Taking the side of the weak, the piece expresses the clashes between those in power and those who are oppressed. It acknowledges that the struggle will continue forever; forming an "eternal spiral".*

  - Performed at KSU New Music Festival; 28 March 2011; Kennesaw State University, Kennesaw, GA, USA
  - Original composition for classical guitar by Leo Brouwer, 1971
  - Guitar recording taken from "Guitar Recital" album by Dmitris Regginos, 2004. Samples are taken from freesound.org and Youtube.

- **Automobile**   Feb, 2011

  Organised Sound, Bağlama & Signal Processing

  > *Having a high sensational, perceptual and cognitive capability, human beings rarely think about their limits or errors. They forget that they can be confused or deceived...*

  - Contributed by Oliver Jan and Akito Van Troyer
  - Composed using samples from field recordings and samples that are taken from freesound.org and Acoustical Society of America

- **Road to School**   Oct 2010

  Short Movie, Directed by Yiğitalp Ertem

  - Foley, sound design and mixing
  - Screened in 22. Ankara International Film Festival; March 2011; Ankara, Turkey and METU Film Festival; Feb 2011; Ankara, Turkey

Selected Performances

- Crossole

  - Performed at the 2011 Atlanta Maker Faire 2011; 10 September 2011; Atlanta, GA, USA and the Listening Machines 2011; April 2011; Atlanta, GA, USA

- Beatscape, a mixed virtual-physical environment for musical ensembles

  - Performed at the *FutureMedia Fest*; 5 October 2010; Atlanta, GA, USA and the *Listening Machines Concert*; 17 April 2010; Atlanta, GA, USA

- LOLC, collaborative live coding environment

  - Performed at the *NIME 2011*; 29 May 2011; Oslo, Norway, the *FutureMedia Fest*; 5 October 2010; Atlanta, GA, USA and the *Listening Machines Concert*; 17 April 2010; Atlanta, GA, USA

- A Reproduction of La Espiral Eterna

  - Performed at KSU New Music Festival; 28 March 2011; Kennesaw State University, Kennesaw, GA, USA

- Classical Guitar

  - *Performed at 50th Year Anniversary of METU Department of Electrical and Electronics Engineering Student Concert*; 16 December 2008; METU Cultural and Convention Center, Ankara, TURKEY
    * Antonio Vivaldi – Concerto in G Major RV 532 with Aslı Topak and Gizem Elçi
    * Joaquin Turina – Hommage à Tárrega
    * Manuel M. Ponce – Prèlude I, *Dedicated to Aleksandros Grigoropoulos*

Personal Interests

Traveling, cooking, Spanish, computer, swimming, skiing, literature

References

Available upon request