

DOĞAÇ BAŞARAN

PHD · R&D SCIENTIST · DEEP LEARNING EXPERT

Institut de Recherche et Coordination Acoustique/Musique (IRCAM),
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Expertise

Machine Learning, Artificial Intelligence, Deep Learning Systems, Audio and Video encoding, Music Information Retrieval, Statistical Signal Processing, Bayesian and approximate inference, Network Multimedia Communications (Coding Algorithms).

Work Experience

Institut de Recherche et Coordination Acoustique/Musique (IRCAM), STMS-CNRS

Paris, France

POST-DOCTORAL RESEARCHER

Jan. 2018 - Present

- Developing algorithms for dominant melody estimation on jazz performances under DigThatLick project using **Deep Neural Networks** involving **CNN** and **RNN** architectures.

TSI, Telecom-Paristech

Paris, France

POST-DOCTORAL RESEARCHER

2016 - 2018

- Developed a system for dominant melody estimation using Source-Filter Nonnegative Matrix Factorization and Deep Neural Network architectures.
- Developed a speaker identification system within a European FP7 project, LASIE where the aim was to analyze large scale audio, video and social media data in order to provide a high level transcription to the law enforcement.

SPiDR WebRTC Gateway, NETAS Telecommunications

Istanbul, Turkey

RESEARCH ENGINEER

2014 - 2016

- Developed improvements on various components of the WebRTC gateway product such as compatibility with mobile operating systems (Android, IOS), compatibility with multimedia devices over VoIP, security of WebRTC, online learning.
- Designed a bit-torrent based P2P system that uses webRTC for Video on Demand (VoD), aimed for increasing QoS for flashcrowds. This was proposed as a part of a H2020 project and funded.
- Prepared 5 European and 7 national project proposals for funding opportunities; all proposals are accepted.
- Lecturer on Multimedia Communications courses where the focus was mostly on audio-video encoding in Bogazici and Bahcesehir Universities.

Signal and Image Processing Lab, Boğaziçi University

Istanbul, Turkey

RESEARCHER, PH.D.

2005 - 2015

- Developed a probabilistic model based system for alignment of multiple audio sequences. The system is able to automatically detect matching/non-matching sequences and align multiple sequences according to each other on a generic timeline. Due to nature of the model based approach, it is possible to utilize various feature representations with the choice of an appropriate observation model and the corresponding score functions.
- Developed a system for audio/video synchronization in collaboration with Singular Software Inc., the final system is integrated into their product **PluralEyes**.
- Developed an algorithm for synchronization of the audio watermarks buried in musical audio tracks in collaboration with Turk Telekom.
- Developed an adaptive noise cancellation algorithm to create a noise-free environment for the **driver** in collaboration with **Ford Otosan**.

Signal and Image Processing Lab, Boğaziçi University

Istanbul, Turkey

RESEARCHER, M.Sc.

2002 - 2005

- Developed an algorithm for *blind audio source separation* in convolutive mixed environments using *Independent Component Analysis* (ICA) and beamforming.

KDE Electronics Inc.

Istanbul, Turkey

SOFTWARE ENGINEER

2004 - 2006

- Developed Smart Card solutions for Electronic Payment Systems and secure e-Commerce applications.

Patents

2016 **D. Başaran**, A. Atalay, "Bir Veri Kodlama Yöntemi (A Data Coding Scheme)". Filed July 9, 2016.. *Turkish Patent Inst.*

2015 **D. Başaran**, A. Atalay, "SDP verilerinin sıkıştırılması için bir veri sıkıştırma yöntemi (A Data Encoding Scheme for coding SDP Data)". Filed October 28, 2015. *Turkish Patent Inst.*

Education

Boğaziçi University

PH.D. IN ELECTRICAL AND ELECTRONICS ENGINEERING

Istanbul, Turkey

2005 - 2015

- Ph.D. Thesis: Model Based Multiple Audio Sequence Alignment (Advisor: Prof. Emin Anarim, Co-advisor: Prof. A. Taylan Cemgil)

Boğaziçi University

M.SC. IN ELECTRICAL AND ELECTRONICS ENGINEERING

Istanbul, Turkey

2002 - 2005

- M.Sc. Thesis: Blind Audio Source Separation with Convolutively Mixed Signals (Advisor: Assoc. Prof. Kerem Harmanci)

Boğaziçi University

B.SC. IN ELECTRICAL AND ELECTRONICS ENGINEERING

Istanbul, Turkey

1997 - 20002

- B.Sc. Project: Blind Source Separation with Duet Algorithm (Advisor: Prof. Bulent Sankur)

Skills

PROGRAMMING LANGUAGES AND TECHNOLOGIES

Python, Keras, Pandas, Scikit-learn, Matlab, C/C++, Visual Studio, Java, Assembly, Git, \LaTeX .

LANGUAGES

Turkish (native), English (fluent), French (Intermediate)

Publications

JOURNALS

- **D. Başaran**, A. T. Cemgil, E. Anarim, "Multiresolution alignment for multiple unsynchronized audio sequences using sequential Monte Carlo samplers", *Digital Signal Processing*, Volume 77, 2018, Pages 77-85
- **D. Başaran**, A. T. Cemgil, E. Anarim, "Multiresolution alignment for multiple unsynchronized audio sequences using sequential Monte Carlo samplers", *SoftwareX*, 2017 (<https://doi.org/10.1016/j.softx.2017.11.006>.)
- A. Atalay, **D. Başaran**, "SDP Compression Algorithm for WebRTC: ESDiPi" *International Journal of Computer and Electrical Engineering*, Vol. 8, No. 1, pp. 77-83, 2016.
- **D. Başaran**, A. T. Cemgil and E. Anarım, "A Probabilistic Model-Based Approach for Aligning Multiple Audio Sequences" in *IEEE Transactions on Audio, Speech and Language Processing*, Vol. 23, No. 7, pp. 1160-1171, 2015.

CONFERENCE PAPERS

- **D. Başaran**, S. Essid and G. Peeters, "Main Melody Extraction with source-filter NMF and C-RNN", In 19th International Society for Music Information Retrieval Conference, ISMIR, 2018 (Accepted)
- **D. Başaran**, A. T. Cemgil and E. Anarım, "Tempo Özütleme Öncül İşlemesi ile Model Tabanlı Çoklu Müzik Dizisi Hizalanması", in 2016 24th Signal Processing and Communication Application Conference (SIU), 2016, pp. 1525-1528.
- B. Daldal, I. Bilgin, **D. Başaran**, S. Metin, "Using Web Services For WebRTC Signaling Interoperability", NOMS 2016 - 2016 IEEE/IFIP Network Operations and Management Symposium, Istanbul, 2016, pp. 780-783.
- M. M. Suzgun, H. Pehlivan, C. Camgoz, A. Kindirlioğlu, **D. Başaran**, C. Togay, L. Akarun, "HospiSign: An Interactive Sign Language Platform for Hearing Impaired", International Conference on Computer Graphics, Animation and Gaming Technologies, 2015.
- H. Kilinc, **D. Başaran**, "WebRTC Security and Privacy", 2nd National Cryptology Workshop, CryptoDays, 2015.
- **D. Başaran**, A. T. Cemgil and E. Anarım, "SMC Samplers for Multiresolution Audio Sequence Alignment" in International Conference on Acoustics Speech and Signal Processing ICASSP, 2013.
- **D. Başaran**, A. T. Cemgil and E. Anarım, "Belirlenimci Benzerlik Yöntemlerine Dayalı Model Tabanlı Ses Dizisi Hizalanması (Model Based Audio Sequence Alignment Based on Deterministic Similarity Methods)" in Signal Processing and Communications Applications Conference, IEEE 21th, 2013.
- **D. Başaran**, A. Cemgil and E. Anarım, "Model Tabanlı Ses Dizisi Hizalanması (Model based audio sequence alignment)" in Signal Processing and Communications Applications (SIU), 2011 IEEE 19th Conference on, pp. 606 -609, April 2011.
- **D. Başaran**, A. T. Cemgil and E. Anarım, "Model Based Multiple Audio Sequence Alignment" in Proc. IEEE Workshop on Applications of Signal Processing to Audio and Acoustics WASPAA '11, pp. 13-16, 2011. CPCI-S.