Serkan Sulun

Machine learning scientist, with 10+ years of experience in research and teaching.

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❖ github.com/serkansulun ❖ Google Scholar

PUBLICATIONS

Sulun, S., Viana, P., & Davies, M. E. P. (2025). Video Soundtrack Generation by Aligning Emotions and Temporal Boundaries. (**In revision).** arXiv:2502.10154

Sulun, S., Viana, P., & Davies, M. E. P. (2024). VEMOCLAP - A video emotion classification web application. 2024 IEEE International Symposium on Multimedia (ISM), 137–140. DOI | arXiv | demo

Sulun, S., Viana, P., & Davies, M. E. P. (2024). Movie trailer genre classification using multimodal pretrained features. Expert Systems with Applications, 258, 125209. DOI | arXiv | code

Sulun, S., Oliveira, P., & Viana, P. (2023). Emotion4MIDI: A Lyrics-based Emotion-Labeled Symbolic Music Dataset. EPIA 2023. Lecture Notes in Computer Science, vol 14116. Springer. DOI | arXiv | code

Sulun, S., Davies, M. E. P., & Viana, P. (2022). Symbolic Music Generation Conditioned on Continuous-Valued Emotions. IEEE Access, 10, 44617–44626. **(35+ citations)** DOI | arXiv | code

Sulun, S., & Tekalp, A. M. (2021). Can learned frame prediction compete with block motion compensation for video coding? Signal, Image and Video Processing, 15(2), 401–410. **(10+ cumulative citations)** DOI | arXiv | code

Sulun, S., & Davies, M. E. P. (2020). On filter generalization for music bandwidth extension using deep neural networks. IEEE Journal of Selected Topics in Signal Processing, 15(1), 132–142. **(25+ citations)** DOI | arXiv | code

Sulun, S. (2018). Deep Learned Frame Prediction for Video Compression, Master's Thesis. arXiv | code

WORK EXPERIENCE

INESC TEC, *Researcher* — **Mar. 2019 – Present**
- Automatic video-based symbolic music generation
- Audio bandwidth enhancement

Porto, Portugal

University of Porto, *Lecturer* — **Sep. 2023 – Present**
- Lecturer for the course Programming with Python

Porto, Portugal

Catolica Porto Business School, *Lecturer* — **Mar. 2024 – Present**
- Lecturer for the course Python for Business Analytics

Porto, Portugal

Koc University, *Research assistant* — **Sep. 2016 – Nov. 2018**
- Video compression and frame prediction using deep neural networks

Istanbul, Turkey

Koc University, *Teaching assistant* — **Sep. 2016 – Nov. 2018**
- Preparing and leading laboratory sessions for the course, Programming with MATLAB

Istanbul, Turkey

Telfs Youth Center Studio, *Sound engineer (volunteer)* — **Oct. 2014 – Aug. 2015**
- Recording and mixing music performed by local youngsters

Telfs, Austria

Champalimaud Centre for the Unknown, *Intern* — **Jul. 2013 – Oct. 2013**
- Processing neural signals and videos obtained by rat experiments
- Designing the controller board.
- Article acknowledgment: DOI

Lisbon, Portugal

Sabanci University — **Feb. 2010 – Jun. 2014**
- Peer lecturer on freshman mathematics, physics, chemistry, and biology

Istanbul, Turkey

EDUCATION

University of Porto — **Present**
PhD, Electrical and Computer Engineering — *Porto, Portugal*

Koc University — **Nov. 2018**
MS, Electrical and Electronics Engineering (GPA: 3.81/4, converted to 19/20) — *Istanbul, Turkey*

Sabanci University — **Jun. 2014**
BS, Electronics Engineering (GPA: 3.86/4, converted to 20/20) — *Istanbul, Turkey*

AWARDS & FUNDING

Doctoral Fellowship, la Caixa Foundation
Doctoral Fellowship, Portuguese Foundation for Science and Technology (FCT)
Seed Projects Research Grant, INESC TEC
Best Presentation Award, EPIA Conference on Artificial Intelligence Student Symposium
Ranked 9 out of 204,392 in the Turkish Academic Personnel and Graduate Education Exam
Ranked 297 out of 1,349,782 in Turkish University Entrance Exam
Graduate Fellowship (Master's), Koc University
Excellence Merit Scholarship (Bachelor's), Education Foundation of Turkey
Excellence Merit Scholarship (Bachelor's), Sabanci University
Employment Scholarship, Sabanci University
Bachelors Scholarship, Prime Ministry of Turkey
Erasmus+ Exchange Grant, European Commission
Erasmus+ Internship Grant, European Commission

SKILLS

Deep learning: Pytorch, Tensorflow, generative AI, transformers, adversarial learning, convolutional neural networks, recurrent neural networks, cloud platforms (AWS, GCP, Azure), Slurm
Programming: Python, MATLAB, C++, Julia
Signal processing: MIDI, audio, image, video, natural language processing; video compression; computer vision
Miscellaneous: Machine learning, remote development, Git, LaTeX, Ubuntu, Bash
Music: Drumming, Cubase, Protools, Audacity, MIDI

MANAGEMENT AND LEADERSHIP

Principal Investigator: INESC TEC Seed project: Video and MIDI processing using deep neural networks.
Supervisor: Master's thesis: Emotion classification of MIDI lyrics using transformers
Supervisor: Bachelor's project: Structural labeling of MIDI data
Coordinator: Lab sessions and 5 assistants in the course, Introduction to MATLAB

INVITED TALKS

Introduction to deep learning, *Polytechnic Institute of Porto, Portugal*
Deep learning for music generation, *University of Porto, Portugal*
Deep learning for music information retrieval, *University of Porto, Portugal*

INTERVIEWS

SIC Noticias: Portugal vai receber Turquia — Website | YouTube
Observador: Generating music from videos — Portuguese original | English translation
Olhar No Progresso: Deep learning, multimedia, and music — Website | YouTube

LANGUAGES

English (C2), Portuguese (B1), Turkish (native)

ACTIVITIES

Finished in 04:20:05, in the 42 km. Porto Marathon
Drummer, in Santa Cecilia Music School rock band
Parachuting, in Turkish Aeronautical Association with 5-day training camp and 400 m. solo jump
Volunteer, Telfs Youth Center Austria (Erasmus+) and World Wide Opportunities on Organic Farms (WWOOF)