

Pinar AKYAZI

ELECTRICAL AND ELECTRONICS
ENGINEER *specialized in*

SIGNAL, IMAGE AND VIDEO PROCESSING
MACHINE LEARNING
MULTIMEDIA COMPRESSION & QUALITY ASSESSMENT
BIOMEDICAL IMAGING
COMMUNICATION TECHNOLOGIES

PERSONAL DATA

PLACE AND DATE OF BIRTH: Ankara, Turkey | 30 May 1988
ADDRESS: Avenue d'Ouchy 58, 1006 Lausanne, Switzerland
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ACADEMIC EXPERIENCE

- JAN 2018 - *Present* | Research and Teaching Assistant in EPFL-STI-IEL-MMSPG
Research Interests: Learning-based image compression, learning-based objective quality assessment, subjective quality assessment, digital media
Currently building learning-based models for image compression and quality assessment of videos of different modalities, as part of an InnoSuisse project.
ISO member, taking part in SC29/WG1 as chairwoman of JPEG AI and participating in the development and evaluation of JPEG XL.
- SEPT 2014 - DEC 2017 | Research and Teaching Assistant in EPFL-STI-IEL-LTS4
Research Interests: Signal processing on graphs, multiview systems, immersive communication, image processing
Developed graph based methods to improve free viewpoint navigation systems in 3D environments, as part of a SNSF funded project.
- SEPT 2010 - AUG 2013 | Research and Teaching Assistant in Bogazici University, BUSIM/VAVLab
Successfully carried out joint research in departments of Electrical and Electronics Engineering and Biomedical Engineering, on revealing the heterogeneous characteristics of force distribution along skeletal muscle fibers on human leg.
- AUG 2010 | Summer project in Brno University of Technology
Project title: "Building an Open Source Speech Recognition Toolkit based on Subspace Gaussian Mixture Models (SGMMs) using Weighted Finite State Transducers"
Took part in the design of Kaldi, a free, open-source toolkit for speech recognition research.
- JUN - JULY 2009 | Summer workshop in Johns Hopkins University, CLSP
Project title: "Low Development Cost, High Quality Speech Recognition for New Languages and Domains"
Attended a two month workshop on building acoustic models for speech recognition and automatic lexicon learning.

WORK EXPERIENCE

- FEB 2013 | Intern at Vistek ISRA Vision, Istanbul
Worked on developing algorithms for artificial vision.
- JUN - JULY 2008 | Intern at iSEC-Siemens, Ankara
Worked on enhancing models for communication networks.

EDUCATION

- SEPT 2014 - *Present* PhD Candidate in ELECTRICAL AND ELECTRONICS ENGINEERING
Swiss Federal Institute of Technology, Lausanne
Thesis title: "Image Compression and Quality Assessment using Deep Convolutional Neural Networks" | Advisor: Prof. Touradj EBRAHIMI
Our goal is to develop a learning-based codec that employs a learning-based objective quality metric in the training objective. We have built a convolutional autoencoder using PSNR and MS-SSIM in loss function, as well as a CNN-based objective metric that is able to predict image quality highly correlated with subjective ratings.
- SEPT 2010 - AUG 2013 Master of Science Degree in ELECTRICAL AND ELECTRONICS ENGINEERING
Bogazici University, Istanbul
Thesis: "Diffusion Tensor Field Deformations Under Active and Passive Stretching of Skeletal Muscles" | Advisors: Prof. Burak ACAR, Prof. A. Can YUCESoy
By analyzing the diffusion statistics and strain distribution, we have confirmed the heterogeneous strain distribution along skeletal muscle fibers.
GPA: 3.66/4.00
- SEPT 2006 - JUNE 2010 Bachelor of Science Degree in ELECTRICAL AND ELECTRONICS ENGINEERING
Bogazici University, Istanbul
Senior project: "Optimization of Voxel Similarity Measures for Graph Theoretic Segmentation of Liver Lesions" | Advisor: Prof. Burak ACAR
General training in electrical and electronics engineering with an emphasis on telecommunications, signal and image processing, biomedical image processing.
GPA: 3.46/4.00
- SEPT 2005 - MAY 2006 Bachelor student in ELECTRICAL AND ELECTRONICS ENGINEERING
Bilkent University, Istanbul
GPA: 3.79/4.00

SKILLS

Programming languages: Python, C++, MATLAB, C, Java
Machine learning platforms: PyTorch, Tensorflow
Open access platforms: GitHub, Authorea, Jupyter
Circuit design: MicroSim, PSpice, LabView, ModelSim, Xilinx

LANGUAGES

FULL WORKING PROFICIENCY: **English (C2)**
LIMITED WORKING PROFICIENCY: **French (B1), Italian (B1)**
MOTHER TONGUE: **Turkish**

INTERESTS AND ACTIVITIES

Passionate about open science and social entrepreneurship
Amateur pianist for twenty years
Love running, recently ran the 20km race in Lausanne

PUBLICATIONS

JOURNAL ARTICLES

- Povey, Daniel, Lukás Burget, Mohit Agarwal, Pinar Akyazi, Feng Kai, Arnab Ghoshal, Ondrej Glembek et al. "The subspace Gaussian mixture model—A structured model for speech recognition." *Computer Speech & Language* 25, no. 2 (2011): 404-439.

CONFERENCE PROCEEDINGS

- Akyazi, Pinar, and Touradj Ebrahimi. "Learning-Based Image Compression using Convolutional Autoencoder and Wavelet Decomposition." *Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition (CVPR) Workshops*, 2019.
- Cheng, Zhengxue, Pinar Akyazi, Heming Sun, Jiro Katto, and Touradj Ebrahimi. "Perceptual Quality Study on Deep Learning based Image Compression." *IEEE International Conference on Image Processing (ICIP)*, 2019.
- Upenik, Evgeniy, Pinar Akyazi, Mehmet Tuzmen, and Touradj Ebrahimi. "Inpainting in omnidirectional images for privacy protection." In *IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, 2019.
- Akyazi, Pinar, and Touradj Ebrahimi. "An Improved Objective Metric to Predict Image Quality using Deep Neural Networks." *IS&T Electronic Imaging Proceedings*, 2019.
- Akyazi, Pinar, and Touradj Ebrahimi. "A new objective metric to predict image quality using deep neural networks." *Applications of Digital Image Processing XLI*. Vol. 10752. International Society for Optics and Photonics, 2018.
- Akyazi, Pinar, and Touradj Ebrahimi. "Comparison of Comparison Efficiency between HEVC/H.264, VP9 and AV1 based on Subjective Quality Assessments." *10th International Conference on Quality of Multimedia Experience (QoMEX)*, 2018.
- Akyazi, Pinar, and Pascal Frossard. "Graph-Based Inpainting for Zooming in 3D Scenes." In *26th European Signal Processing Conference (EUSIPCO)*, 2018.
- Tzamarias Olivier Eustathios, Dion, Pinar Akyazi, and Pascal Frossard. "A Novel Method for Sampling Bandlimited Graph Signals" In *26th European Signal Processing Conference (EUSIPCO)*, 2018.
- Akyazi, Pinar, and Pascal Frossard. "Graph-Based Interpolation for Zooming in 3D Scenes." In *25th European Signal Processing Conference (EUSIPCO)*, 2017.
- Povey, Daniel, Lukás Burget, Mohit Agarwal, Pinar Akyazi, Kai Feng, Arnab Ghoshal, Ondrej Glembek et al. "Subspace Gaussian mixture models for speech recognition." In *Acoustics Speech and Signal Processing (ICASSP), 2010 IEEE International Conference on*, pp. 4330-4333. IEEE, 2010.
- Burget, Lukás, Petr Schwarz, Mohit Agarwal, Pinar Akyazi, Kai Feng, Arnab Ghoshal, Ondrej Glembek et al. "Multilingual acoustic modeling for speech recognition based on subspace Gaussian mixture models." In *Acoustics Speech and Signal Processing (ICASSP), 2010 IEEE International Conference on*, pp. 4334-4337. IEEE, 2010.
- Burget, Lukás, Petr Schwarz, Mohit Agarwal, Pinar Akyazi, Kai Feng, Arnab Ghoshal, Ondrej Glembek et al. "Multilingual acoustic modeling for speech recognition based on subspace Gaussian mixture models." In *Acoustics Speech and Signal Processing (ICASSP), 2010 IEEE International Conference on*, pp. 4334-4337. IEEE, 2010.
- Goel, Nagendra, Samuel Thomas, Mohit Agarwal, Pinar Akyazi, Lukás Burget, Kai Feng, Arnab Ghoshal et al. "Approaches to automatic lexicon learning with limited training examples." In *Acoustics Speech and Signal Processing (ICASSP), 2010 IEEE International Conference on*, pp. 5094-5097. IEEE, 2010.