Tahereh Zarrat Ehsan

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Google Scholar | Research gate | Personal Page

RESEARCH INTERESTS

- Deep Learning
- Computer Vision
- Image and Video Processing
- Pattern Recognition
- Machine Learning
- Action Recognition

EDUCATION

University of Guilan

Rasht, Iran

2016 - 2019

M.Sc., Electrical engineering, Major: Digital Electronic

- Thesis: Abnormal human behavior recognition based on image processing techniques, Defended with the score of 4 of 4
- GPA: 3.36/4.00

University of Guilan

Rasht, Iran

2009 - 2014

B.Sc., Electrical engineering

- Thesis: Analysis and design of a PID controller for regulating blood glucose of diabetic patients
- Last two years GPA: 3.14/4.00

PUBLICATIONS

- **Ehsan, T.Z.** and Nahvi, M., "Violence detection in indoor surveillance cameras using motion trajectory and differential histogram of optical flow", IEEE 8th International Conference on Computer and Knowledge Engineering (ICCKE), **2018**. DOI: https://doi.org/10.1109/ICCKE.2018.8566460
- **Ehsan, T.Z.** and Mohtavipour, S.M., "Vi-Net: A Deep Violent Flow Network for Violence Detection in Video Sequences", IEEE 11th International Conference on Information and Knowledge Technology (IKT), **2020**. DOI: https://doi.org/10.1109/IKT51791.2020.9345617

Ehsan, T.Z., Nahvi, M and Mohtavipour, S.M., DABA-Net: Deep Acceleration-Based AutoEncoder Network for Violence Detection in Surveillance Cameras, IEEE MIVP (Machine Vision and Image Processing) conference, **2022.** DOI: https://doi.org/10.1109/MVIP53647.2022.9738791

- **Ehsan, T.Z**., Nahvi, M and Mohtavipour, S.M., "An Accurate Violence Detection Framework Using Unsupervised Spatio-Temporal Action Translation Network", **2021**. (Submitted to Visual Computer journal)
- **Ehsan, T.Z**., Nahvi, M and Mohtavipour, S.M., "Learning Deep Latent Space for Unsupervised Violence Detection", **2021.** (Submitted to Multimedia Tools and Application journal)
- **Ehsan, T.Z**., Nahvi, M., Mohtavipour, S.M., Mollajafari, M., "A Review on Violence Detection in Video Sequences", **2022.** (Draft)

RESEARCH EXPERIENCE

Independent Researcher 2019 - Present

- Python programming implementation of various deep learning methods such as CNN, AE, and RNN using customized loss function and maximum likelihood principle
- Python programming implementation of *probabilistic* deep learning, *unsupervised* learning, and *generative* modeling such as Normalizing flows, VAE, GAN, pix2pix, Cycle GAN, PixelCNN and WaveNet

Master's Researcher 2016 - 2019

- Experience with research and application of machine learning, deep learning, pattern recognition, and data analysis techniques including computer vision.
- Programming implementation of various image processing techniques such as object detection, tracking, motion estimation, segmentation, feature extraction, feature matching, and optimization.

TECHNICAL SKILLS

- Programming languages: Proficient: Python, Object-Oriented, MATLAB, familiar: C/C++
- Deep learning Frameworks: Tensorflow, Tensorflow Probability, Keras, Numpy, Scipy, Pandas, OpenCV
- Computer: Windows operating systems, Linux
- Digital experiences: Embedded systems such as Arduino and Raspberry pi

LANGUAGES

- English: TOEFL iBT 92
- Persian: Native

PROFESSIONAL TRAINING

- TensorFlow 2 for Deep Learning Specialization, a 3-course specialization by Imperial College London on Coursera. Specialization Certificate earned in 2021.
- DeepLearning.AI TensorFlow Developer Professional, a 4-course specialization by Google AI engineer Laurence Moroney on Coursera. Specialization Certificate earned in 2021.
- Generative Adversarial Networks (GANs) Specialization, a 3-course specialization by Stanford University on Coursera. Specialization Certificate earned in 2020.

HONOR & AWARDS

- Ranked among the **top 2%** in the National University Entrance Exam among over 50,000 participants in the Electrical Engineering field, Iran, 2016.
- Ranked among the **top 1%** in the National University Entrance Exam among over 300,000 participants in the Mathematics and Physics field, Iran, 2009.
- Accepted to participate in Mathematics Olympiad stage 2 from the **top 5%** of the participants in Mathematics Olympiad stage 1, Iran, 2006.