Hossein Kashiani

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Kashiani

Research Interests

Computer Vision, Deep Learning, Machine Learning

Education

2024 – 2026 **PhD. in Electrical Engineering**, *Clemson University*, Clemson, South Carolina.
Supervisor: Fatemeh Afghah

2022 – 2024 **PhD. in Electrical Engineering**, *West Virginia University*, Morgantown, West Virginia.
GPA: 4/4 [Transferred]

2018 – 2015 **M.Sc. in Electrical Engineering - Digital Electronic Systems**, *Iran University of Science and Technology*, Tehran, Iran.
GPA: *17.80/20* (3.88/4)

2015 – 2011 **B.Sc. in Electrical Engineering - Telecommunications**, *Imam Khomeini International University*, Ghazvin, Iran.
GPA: *17.19/20* (3.68/4)

Experience

2022 – 2024 **Research Assistant**, *IS-WIN Laboratory, Electrical & Computer Engineering Department*, Clemson University, USA.

2022 – 2024 **Research Assistant**, *Biometrics and Identification Innovation Center , Lane Department of Computer Science & Electrical Engineering*, West Virginia University, USA.

2017 – 2021 **Research Assistant**, *Computer Vision Laboratory, Electrical Engineering Department*, Iran University of Science and Technology, Tehran, Iran.

2017 – 2021 **Teaching Assistant**, *Courses: Computer Vision, Machine Learning, Computer Vision, Intelligent Systems, Electrical Engineering Department, Iran University of Science and Technology*, Tehran, Iran.

Publications

[1] N. A. Talemi, H. Kashiani, and N. M. Nasrabadi, "CATFace: Cross-attribute-guided transformer with self-attention distillation for low-quality face recognition," *IEEE Transactions on Biometrics, Behavior, and Identity Science*, 2024, [Link].

[2] N. A. Talemi, H. Kashiani, S. R. Malakshan, M. S. E. Saadabadi, N. Najafzadeh, M. Akyash, and N. M. Nasrabadi, "AAFace: Attribute-aware attentional network for face recognition," in *IEEE International Conference on Image Processing (ICIP)*, pp. 1940–1944, 2023, [Link].

[3] H. Kashiani, N. A. Talemi, M. S. E. Saadabadi, and N. M. Nasrabadi, "Towards generalizable morph attack detection with consistency regularization," in *IEEE International Joint Conference on Biometrics (IJCB)*, 2023.

[4] M. S. E. Saadabadi, S. R. Malakshan, H. Kashiani, and N. M. Nasrabadi, "CCFace: Classification consistency for low-resolution face recognition," in *IEEE International Joint Conference on Biometrics (IJCB)*, 2023.

[5] O. N. Manzari, H. Ahmadabadia, H. Kashiani, S. B. Shokouhi, and A. Ayatollahi, "MedViT: A robust vision transformer for generalized medical image classifcation," *Computers in Biology and Medicine*, 2023, [Link], IF = 7.7.

[6] O. N. Manzari, H. Kashiani, H. A. Dehkordi, and S. B. Shokouhi, "Robust transformer with locality inductive bias and feature normalization," *Engineering Science and Technology, an International Journal*, vol. 38, p. 101320, 2023, [Link], IF = 5.7.

[7] N. Najafzadeh, H. Kashiani, M. S. Ebrahimi Saadabadi, N. Alipour, S. Rahimi Malekshan, and N. M. Nasrabadi, "Face image quality vector assessment for biometrics applications," in *Proceedings of the IEEE/CVF Winter Conference on Applications of Computer Vision (WACVW)*, 2023, [Link].

[8] H. Kashiani, S. M. Sami, S. Soleymani, and N. M. Nasrabadi, "Robust ensemble morph detection with domain generalization," in *IEEE International Joint Conference on Biometrics (IJCB)*, 2022, [Link].

[9] H. A. Dehkordi, A. S. Nezhad, H. Kashiani, S. B. Shokouhi, and A. Ayatollahi, "Multi-expert human action recognition with hierarchical super-class learning," *Knowledge-Based Systems*, vol. 250, p. 109091, 2022, [Link], IF = 8.8.

[10] A. Khosravian, A. Amirkhani, H. Kashiani, and M. Masih-Tehrani, "Generalizing state-of-the-art object detectors for autonomous vehicles in unseen environments," *Expert Systems with Applications*, vol. 183, p. 115417, 2021, [Link], IF = 8.5.

[11] H. A. Dehkordi, H. Kashiani, A. A. Hamidi Imani, and S. B. Shokouhi, "Lightweight local transformer for covid-19 detection using chest ct scans," in *2021 11th International Conference on Computer Engineering and Knowledge (ICCKE)*, IEEE, 2021, [Link].

[12] M. Molaie, A. Amirkhani, and H. Kashiani, "Auto-driving policies in highway based on distributional deep reinforcement learning," in *2021 5th International Conference on Pattern Recognition and Image Analysis (IPRIA)*, 2021, [Link].

[13] A. Amirkhani, A. Khosravian, M. Masih-Tehrani, and H. Kashiani, "Robust semantic segmentation with multi-teacher knowledge distillation," *IEEE Access*, 2021, [Link], IF = 3.9.

[14] H. Kashiani and S. B. Shokouhi, "Visual object tracking based on adaptive siamese and motion estimation network," *Image and Vision Computing*, vol. 83-84, pp. 17–28, 2019, [Link], IF = 4.7.

[15] H. Kashiyani and S. B. Shokouhi, "Patchwise object tracking via structural local sparse appearance model," in *2017 7th International Conference on Computer and Knowledge Engineering (ICCKE)*, 2017, [Link].

Awards and Honours

Ranked in top 10% among students in B.Sc. and M.Sc. programs.

Ranked in top 1% among M.Sc. participants in the Nationwide Entrance Exam of Universities.

Academic Service

Reviewer in prestigious academic venues (more than 70 papers) in computer vision, machine learning, and artificial intelligence fields for:

- AAAI Conference on Artificial Intelligence (AAAI) 2025.
- The IEEE/CVF Computer Vision and Pattern Recognition Conference (CVPR) 2024.
- International Conference on Multimedia and Expo (ICME) (2022, 2023, 2024).
- International Conference on Image Processing (2021, 2022)
- IEEE Access IEEE, IF = 3.9.
- Transactions on Circuits and Systems for Video Technology, IEEE, IF = 8.4.
- Neurocomputing, Elsevier, IF = 5.77.
- Pattern Recognition, Elsevier, IF = 8.
- Engineering Applications of Artificial Intelligence, Elsevier, IF = 8.
- Computers in Biology and Medicine, Elsevier, IF = 7.7.
- Knowledge-Based Systems, Elsevier, IF = 8.2.
- International Journal of Engineering Science and Technology, Elsevier, IF = 5.7.

The review records of the journal papers can be observed at Web of Science.

Projects

Generalizable Face Morphing Attack Detection

Face morphing attacks have emerged as a serious security threat for automatic face recognition systems. In this project, I am working to automatically and accurately detect morphed face images using deep learning models. My research includes single-image and differential morph attack detection.

Image Action Recognition With Transformers

In this project, we have implemented an expert lightweight CNN network to recognize human action in a still image by adapting transformers (Research Project).

Imbalanced Human Action Recognition Dataset

In this project, we have created a new imbalanced human action recognition dataset which includes 23854 images of humans performing 46 actions (Research Project).

Using Transformer-Based Architecture for COVID-19 Detection

To make it possible to use multi head attention for small scale datasets, especially for COVID-19 detection, a number of lightweight transformers were proposed in this project (Research Project).

Improving the Intra-Domain and Cross-Domain Robustness for Object Detection and Semantic Segmentation Tasks in Autonomous Vehicles

In this work, we surmounted the adverse data scarcity issue for intra-domain and cross-domain robustness through unsupervised image-to-image translations, and knowledge distillation (Paper Project).

Image-Based Segmentation and Classification of Breast Cancer Tumors by Convolutional Neural Networks

In this project, I used mammography images to segment breast tumor with fully convolutional neural network and then classify the extracted masses as either benign or malignant (Research Project).

Implementation of a Robust Transformer with Inductive Bias and Feature Normalization

In this project, we implemented an vision transformer that explore the robustness of vision transformers against adversarial perturbations and try to enhance their robustness/accuracy trade-off in white box attack settings (Paper Project).

Implementation of a Vision Transformer for Generalized Medical Image Classification

In this project, we propose a highly robust yet efficient CNN-Transformer hybrid model which is equipped with the locality of CNNs as well as the global connectivity of vision Transformers. Our proposed hybrid model demonstrates its high robustness and generalization ability in comparison with the state-of-the-art studies on a largescale collection of standardized 2D MedMNIST datasets (Paper Project).

Relevant Coursework

PhD	Deep Learning (A), Applications of Neural Network (A), Pattern Recognition (A), Responsible AI (A), Stochastic Systems Theory (A)
Master	Machine Vision (18.5/20), Intelligent Systems (19.5/20), Digital Signal Processing (18.5/20))
Undergraduate	Statistics and Probability (18/20), Numerical Analysis (17.5/20), Mathematics II & I (19.5 & 18.4/20), Engineering Mathematics (17/20), B.Sc. Project (20/20)

MOOC	Machine Learning, Machine Intelligence, Convolutional Neural Networks for Visual Recognition, Advanced Deep Learning for Computer Vision

Computer Skills

Programming	Python, MATLAB, C++, VHDL
Type Setting	LaTeX, Microsoft Office
OS	Microsoft Windows, Linux
IDE	PyCharm, Spyder, Microsoft Visual Studio, Jupyter
Libraries	Pytorch, MatConvNet, OpenCV, Tensorflow, CAFFE, SciPy, Matplotlib, SciKit-Learn, Pillow, SPAMS

Languages

Persian	Native
English	GRE: Quantitative Reasoning: 164, Verbal Reasoning: 151, Analytical Writing: 4
English	TOEFL IBT: 98 (R:29, L:27, S:20, W:22, Test Date: December 01, 2019)

References

- **Fatemeh Afghah**, Associate Professor, Electrical and Computer Engineering Department, Clemson University, Email: fafghah@clemson.edu
- **Shahriar Baradaran Shokouhi**, Associate Professor, School of Electrical Engineering, Iran University of Science and Technology, Email: bshokouhi@iust.ac.ir
- **Ahmad Ayatollahi**, Professor, School of Electrical Engineering, Iran University of Science and Technology, Email: ayatollahi@iust.ac.ir