Mahyar Khayatkhoei

Ph.D. in Computer Science
USC Information Sciences Institute
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Education

Rutgers University *01.2019 – 10.2021*
Ph.D. in Computer Science
Thesis: *Geometric and Spectral Limitations in Generative Adversarial Networks*
Advisor: *Dr. Ahmed Elgammal*

Rutgers University *09.2015 – 01.2019*
M.Sc. in Computer Science
Thesis: *Disconnected Manifold Learning in Generative Adversarial Networks*
Advisor: *Dr. Ahmed Elgammal*

University of Tehran *09.2010 – 07.2015*
B.Sc. in Electrical Engineering
Thesis: *Integrating Model-based Heuristics into Model-free Reinforcement Learning*
Advisor: *Dr. Majid Nili Ahmadabadi*

Professional Experience

University of Southern California, Information Sciences Institute *05.2022 – Present*
Research Scientist
Revealing and resolving limitations in generative deep neural networks

Liveperson *10.2021 – 05.2022*
Research Scientist
Developing Large Language Models for generating intentful and controllable dialogues

Artrendex *06.2019 – 08.2019*
Research Intern
Detecting art pieces in large-scale cluttered pictures of galleries

Verisk Analytics *05.2018 – 08.2018*
Research Intern
Table structure retrieval and recognition from images

Rutgers University *09.2015 – 05.2021*
Research Assistant and Teaching Assistant
Conducting research on limitations of deep neural networks, and holding recitations for graduate-level and undergraduate-level courses in statistics and machine learning

University of Tehran, Robotics and Artificial Intelligence Laboratory *05.2015 – 08.2015*
Research Assistant
Fine displacement detection and measurement in earthquake test videos of structures

Honors and Awards

Keston and ISI Exploratory Research Award (100K USD) *2023*
Role: Principal Investigator
Title: Will Fiction Trump Fact? On the Inevitability of Identity Inconsistency in Deepfake Videos

Best Paper Nominee at the AAAI Conference on Artificial Intelligence *2022*
Spatial frequency bias in convolutional generative adversarial networks

Review Service

International Conference on Learning Representations (ICLR) *2022 – 2024*

International Conference on Machine Learning (ICML) *2021 – 2024*

Advances in Neural Information Processing Systems (NeurIPS) *2021 – 2023*

IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI) *2021*

Skills

Software
Python, PyTorch, Tensorflow, C/C++, Matlab, Mathematica, Bash, CUDA, OpenCV, Git, Unity3D, Blender, PHP, JavaScript, Verilog, Assembly, TEX, LATEX, MS Office, Adobe Creative Suite

Languages
English (Fluent), Persian (Native)

Publications

[1] Song, Khayatkhoei, and AbdAlmageed. ManiFPT: Defining and analyzing fingerprints of generative models. **IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)**, 2024.

[2] Zhang, Khayatkhoei, Chhikara, and Ilievski. Visual cropping improves zero-shot question answering of multimodal large language models. **NeurIPS Workshop on Robustness of Few-shot and Zero-shot Learning in Foundation Models**, 2023.

[3] Li, Khayatkhoei, Zhu, Xie, Hussein, and AbdAlmageed. Information-theoretic bounds on the removal of attribute-specific bias from neural networks. **NeurIPS Workshop on Algorithmic Fairness through the Lens of Time**, 2023.

[4] Song, Khayatkhoei, and AbdAlmageed. Formal definition of fingerprints improves attribution of generative models. **NeurIPS Workshop on Attributing Model Behavior at Scale**, 2023.

[5] Khayatkhoei and Abdalmageed. Emergent asymmetry of precision and recall for measuring fidelity and diversity of generative models in high dimensions. **International Conference on Machine Learning (ICML)**, 2023.

[6] Xie, Zhu, Khayatkhoei, Li, Hussein, and Abdalmageed. A critical view of vision-based long-term dynamics prediction under environment misalignment. **International Conference on Machine Learning (ICML)**, 2023.

[7] Khayatkhoei and Elgammal. Spatial frequency bias in convolutional generative adversarial networks. **AAAI Conference on Artificial Intelligence**, 2022.

[8] Khayatkhoei. Geometric and spectral limitations in generative adversarial networks. PhD thesis, **Rutgers, The State University of New Jersey**, 2021.

[9] Berseth, Haworth, Usman, Schaumann, Khayatkhoei, Kapadia, and Faloutsos. Interactive architectural design with diverse solution exploration. **IEEE Transactions on Visualization and Computer Graphics (TVCG)**, 2019.

[10] Khayatkhoei, Singh, and Elgammal. Disconnected manifold learning for generative adversarial networks. **Advances in Neural Information Processing Systems (NeurIPS)**, 2018.

[11] Haworth, Usman, Berseth, Khayatkhoei, Kapadia, and Faloutsos. Code: Crowd-optimized design of environments. **Computer Animation and Virtual Worlds (CAVW)**, 2017.

[12] Haworth, Usman, Berseth, Khayatkhoei, Kapadia, and Faloutsos. Using synthetic crowds to inform building pillar placements. **IEEE Virtual Humans and Crowds for Immersive Environments (VHCIE)**, 2016.

[13] Haworth, Usman, Berseth, Khayatkhoei, Kapadia, and Faloutsos. Towards computer assisted crowd aware architectural design. **ACM Computer Human Interaction Conference Extended Abstracts on Human Factors in Computing Systems**, 2016.

[14] Binaee, Khayatkhoei, Moradi, Nazemi, and Hosseini. A low-cost vision-based system for displacement analysis in earthquake research. **RSI International Conference on Robotics and Mechatronics (ICRoM)**, 2015.