Hadi Mohaghegh Dolatabadi

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Media: Twitter, Website, Google Scholar

Research Interests

Generative Modeling, Robust Machine Learning, Unsupervised Learning, Computer Vision

Professional Experience

- **Postdoctoral Research Fellow** — Melbourne, Australia
  The University of Melbourne & ARC Center of Excellence (ADM+S) — *Nov. 2022 - Present*
  - Testing implications of data privacy using unlearnable examples and their vulnerability to diffusion models.
  - Supervision of master projects on efficient training of neural networks with coreset selection.

- **Graduate Research Assistant** — Melbourne, Australia
  The University of Melbourne — *Jun. 2019 - Apr. 2023*
  - Design and implementation of various types of generative models (normalizing flows, generative adversarial networks, and diffusion models) for low and high-dimensional data.
  - Design and implementation of robust and efficient learning frameworks for defending neural networks against backdoor and adversarial attacks.
  - Design and implementation of an incognito black-box adversarial attack exploiting the data distribution.

- **Applied Scientist Intern** — Melbourne, Australia
  Amazon Science — *Aug. 2021 - Jan. 2022*
  - Generative modeling for 3D image attribute editing.

Education

- **The University of Melbourne** — Melbourne, Australia
  Ph.D. in Computing and Information Systems — *Jun. 2019 - Apr. 2023*
  - **Supervisors**: Dr. Sarah Erfani, Prof. Christopher Leckie

- **Sharif University of Technology** — Tehran, Iran
  M.Sc. in Electrical Engineering. — *Sep. 2015 - Sep. 2017*
  - **GPA**: 18.89/20.0 (4.00/4.00)

- **The University of Tehran** — Tehran, Iran
  B.Sc. in Electrical Engineering. — *Sep. 2011 - Sep. 2015*
  - **GPA**: 18.33/20.0 (3.92/4.00)

Publications

[Under review] **H. M. Dolatabadi**, S. Erfani, and C. Leckie, "The Devil's Advocate: Shattering the Illusion of Unexploitable Data using Diffusion Models," *arXiv preprint arXiv:2303.08500*, 2023. (Link)

H. M. Dolatabadi, "A Novel Perspective on Robustness in Deep Learning," Doctoral Dissertation, School of Computing and Information Systems, the University of Melbourne, 2023. (Link)

[Under review] **H. M. Dolatabadi**, S. Erfani, and C. Leckie, "Adversarial Coreset Selection for Efficient Robust Training," *arXiv preprint arXiv:2209.05785*, 2022. (Link)

H. M. Dolatabadi, S. Erfani, and C. Leckie "Collider: A Robust Training Framework for Backdoor Data," in *Proceedings of the 16th Asian Conference on Computer Vision* (**ACCV)**, pp. 3893-3910, 2022. (Link)

H. M. Dolatabadi, S. Erfani, and C. Leckie "ℓ_∞-Robustness and Beyond: Unleashing Efficient Adversarial Training," in *Proceedings of the 17th European Conference on Computer Vision* (**ECCV)**, pp. 467-483, 2022. (Link)

H. M. Dolatabadi, S. Erfani, and C. Leckie "AdvFlow: Inconspicuous Black-box Adversarial Attacks using Normalizing Flows," in *Proceedings of the 34th Conference on Neural Information Processing Systems* (**NeurIPS)**, pp. 15871-15884, 2020. (Link)

H. M. Dolatabadi, S. Erfani, and C. Leckie "Black-box Adversarial Example Generation with Normalizing Flows," in *the ICML Workshop on Invertible Neural Networks, Normalizing Flows, and Explicit Likelihood Models* (**INNF+)**, 2020. (Link)

H. M. Dolatabadi, S. Erfani, and C. Leckie "Invertible Generative Modeling using Linear Rational Splines," in *Proceedings of the 23rd International Conference on Artificial Intelligence and Statistics* (**AISTATS)**, pp. 4236-4246, 2020. (Link)

H. M. Dolatabadi and A. Amini, "Deterministic Design of Toeplitz Matrices with Small Coherence Based on Weyl Sums," *IEEE Signal Processing Letters*, vol. 26, no. 10, pp. 1501-1505, 2019. (Link)

H. M. Dolatabadi and A. Amini, "A Sampling Theorem for Convex Shapes with Algebraic Boundaries," in *Proceedings of the International Conference on Sampling Theory and Applications* (**SampTA)**, pp. 499-503, 2017. (Link)

Honors and Awards

- Awarded outstanding reviewer award at the Asian Conference on Computer Vision (ACCV 2022).
- Accepted to *Machine Learning Summer School (MLSS) 2020* at the Max Planck Institute for Intelligent Systems, Tübingen, Germany (acceptance rate: 13.84%).
- Awarded a Graduate Research Scholarship to pursue Ph.D. at the University of Melbourne, Australia.
- Ranked 2$^{\text{nd}}$ among 33 Communication Systems students at Electrical Engineering Department, Sharif University of Technology, Tehran, Iran.
- Ranked 15$^{\text{th}}$ (top 0.2%) in the *Iranian Nationwide University Entrance Exam* for postgraduate studies in Communication Engineering.
- Recognized as the *Outstanding Talent* at University of Tehran and awarded admission to the M.Sc. program.
- Ranked 380$^{\text{th}}$ (top 0.15%) among more than 250,000 participants of the *Iranian Nationwide University Entrance Exam* for undergraduate studies.

Teaching Experience

- **Statistical Machine Learning** — The University of Melbourne
  Tutor — *Semester 1 2022*

- **Compressed Sensing** — Sharif University of Technology
  Teaching Assistant — *Spring 2017*
- **Signals and Systems** — Sharif University of Technology
  Teaching Assistant — *Spring 2017*
- **Engineering Mathematics** — Sharif University of Technology
  Teaching Assistant — *Fall 2017*

Skills

Programming	Python (PyTorch, TensorFlow, OpenCV, SciPy, SkLearn), C (familiar), MATLAB
Operating Systems	Linux (Ubuntu), Windows
Cloud Services	AWS (EC2, S3, IAM)
Others	Git, MySQL (familiar)
Languages	English (fluent, PTE Academic score of 90/90), Persian (native), Arabic (basic)

Service

Invited Reviewer	NeurIPS 2021-23, ICLR 2022-23, ICML 2023, AISTATS 2022-23, ICCV 2023, ACCV 2022, IEEE TPAMI