Mohammad Shahab Sepehri

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Education

University of Southern California — Los Angeles, US
Ph.D. in Electrical Engineering — 2023–2027 (expected)
GPA: 4, Advisor: Prof. Mahdi Soltanolkotabi

University of Southern California — Los Angeles, US
M.Sc. in Electrical Engineering — 2023–2025
GPA: 4, Advisor: Prof. Mahdi Soltanolkotabi

Sharif University of Technology — Tehran, Iran
B.Sc. in Electrical Engineering — 2017–2022
GPA: 19.25 out of 20.00, Advisor: Prof. Matin Hashemi

Sharif University of Technology — Tehran, Iran
B.Sc. in Computer Science — 2019–2022
GPA: 19.25 out of 20.00, Advisor: Prof. Shahram Khazaei

Honors and Awards

- USC-Capital One CREDIF Fellowship (2025)
- Annenberg Graduate Fellowship (2023)
- Silver Medal in Iran National Mathematical Olympiad (2016)

Publications

[1] M. S. Sepehri, Z. Fabian, and M. Soltanolkotabi, "Serpent: Scalable and efficient image restoration via multi-scale structured state space models", *NGSM Workshop at ICML*, 2024.

[2] M. S. Sepehri, Z. Fabian, M. Soltanolkotabi, and M. Soltanolkotabi, "Mediconfusion: Can you trust your AI radiologist? probing the reliability of multimodal medical foundation models", in *The Thirteenth International Conference on Learning Representations (ICLR)*, 2025.

[3] M. S. Sepehri*, A. Mehradfar*, M. Soltanolkotabi, and S. Avestimehr, "Cryptomamba: Leveraging state space models for accurate bitcoin price prediction", in *The Seventh IEEE International Conference on Blockchain and Cryptocurrency (ICBC)*, 2025.

[4] A. Mehradfar, M. S. Sepehri, J. M. Hernandez-Lobato, G. S. Kwon, M. Soltanolkotabi, S. Avestimehr, and M. Rasoulianboroujeni, "Lantern: A machine learning framework for lipid nanoparticle transfection efficiency prediction", *arXiv preprint arXiv:2507.03209*, 2025.

[5] H. Gan, B. Tinaz, M. S. Sepehri, Z. Fabian, and M. Soltanolkotabi, "Conceptmix++: Leveling the playing field in text-to-image benchmarking via iterative prompt optimization", *arXiv preprint arXiv:2507.03275*, 2025.

[6] M. S. Sepehri, B. Tinaz, Z. Fabian, and M. Soltanolkotabi, "Hyperphantasia: A benchmark for evaluating the mental visualization capabilities of multimodal llms", *arXiv preprint arXiv:2507.11932*, 2025.

Research Experience

Reasoning in Large Vision Language Models (Summer 2024 - now)

- Curating a scalable benchmark for probing visual reasoning capabilities of LVLMs.
- Introduced a new benchmark to probe the reliability of LVLMs [2], [6].

Time Series Prediction (Fall 2024 - now)

- Introducing new architecture using State Space Models for financial prediction [3].

Automatic lipid generation for drug discovery (Fall 2022 - Now)

- Developed new algorithms for lipid analysis.
- Introduced new state-of-the-art models for transfection prediction [4].

Efficient AI systems (Fall 2023)

- Introduced a new efficient Mamba-based architecture for efficient image reconstruction [1].

Action Detector for Resource-Constrained Devices (Fall 2020 - Summer 2021)

- Developed efficient action recognition models for edge devices (Raspberry Pi, Jetson Nano).
- Developed a multi-camera system for tracking and classifying actions.

Conference Review

- NeurIPS main Conference (2025)
- Machine Learning and the Physical Sciences workshop @ NeurIPS (2024-2025)

Computer Skills

- **Programming Languages**: Python, JAVA, C, C++, MATLAB
- **Machine learning libraries (Python)**: Pytorch, Tensorflow, scikit-learn
- **Others**: Microsoft Office, Latex