Michal Shlapentokh-Rothman

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Research Interests

Understanding and effective usage of large-scale vision-language models for multi-modal tasks.
Keywords: vision-language, transfer learning, multi-modal, foundation models

Education

University of Illinois at Urbana-Champaign — Urbana, IL
PhD Candidate in Computer Science — *Fall 2020-Present*
Advisors: Derek Hoiem, Yuxiong Wang

Massachusetts Institute of Technology — Cambridge, MA
Masters of Engineering in Computer Science and Electrical Engineering — *Sept 2019 - May 2020*
Thesis Title: Unifying Threat Data with Public Knowledge

Massachusetts Institute of Technology — Cambridge, MA
Bachelor of Science in Computer Science and Engineering — *Sept 2015 - May 2019*
Research Advisors: Erik Hemberg, Una-May O'Reilly

Research Experience

University of Illinois at Urbana-Champaign — Urbana, IL
Graduate Researcher — *Fall 2020-Present*
Augmenting vision-language models with large language models

Amazon — Virtual
Applied Science Intern, Manager: Greg Hager, Mentor: Mohsen Malmir — *May 2022- Aug 2022*
Category discovery with unlabeled data

Amazon — Virtual
Applied Science Intern, Manager: Greg Hager, Mentor: Ejaz Ahmed — *May 2021 - Aug 2021*
Transfer learning with limited labels

Computer Science and Artificial Intelligence Laboratory, ALFA Lab — Cambridge, MA
Graduate Researcher — *Aug 2019-May 2019*
Evolutionary algorithms for network security

Computer Science and Artifical Intelligence Laboratory, ALFA Lab — Cambridge, MA
Advanced Undergraduate Researcher — *Aug 2018-May 2019*
Attack simulations for robust network configurations

Publications and Preprints

[1] **M. Shlapentokh-Rothman***, A. Blume*, Y. Xiao, Y. Wu, S. TV, H. Tao, J. Y. Lee, W. Torres, Y.-X. Wang, and D. Hoiem, "Region-based representations revisited," in *Conference on Computer Vision and Pattern Recognition (CVPR)*, 2024.

[2] H. Tao, S. TV, **M. Shlapentokh-Rothman**, D. Hoiem, and H. Ji, "Webwise: Web interface control and sequential exploration with large language models," *arXiv preprint arXiv:2310.16042*, 2023.

[3] A. Zhou, K. Yan, **M. Shlapentokh-Rothman**, H. Wang, and Y.-X. Wang, "Language agent tree search unifies reasoning acting and planning in language models," *arXiv preprint arXiv:2310.04406*, 2023.

[4] D. Hoiem, T. Gupta, Z. Li, and **M. Shlapentokh-Rothman**, "Learning curves for analysis of deep networks," in *Proceedings of the 38th International Conference on Machine Learning (ICML)*, 2021.

[1]Updated April 16, 2024

[5] **M. Shlapentokh-Rothman**, J. Kelly, A. Baral, E. Hemberg, and U.-M. O'Reilly, "Coevolutionary modeling of cyber attack patterns and mitigations using public datasets," in *Proceedings of the Genetic and Evolutionary Computation Conference*, 2021.

[6] E. Hemberg, J. Kelly, **M. Shlapentokh-Rothman**, B. Reinstadler, K. Xu, N. Rutar, and U.-M. O'Reilly, "Linking threat tactics, techniques, and patterns with defensive weaknesses, vulnerabilities and affected platform configurations for cyber hunting," *arXiv preprint arXiv:2010.00533*, 2020.

[7] **M. Shlapentokh-Rothman**, E. Hemberg, and U.-M. O'Reilly, "Securing the software defined perimeter with evolutionary co-optimization," in *Proceedings of the 2020 Genetic and Evolutionary Computation Conference Companion*, 2020.

Teaching Experience

Computational Photography, UIUC CS 445, Graduate TA — Spring 2021, 2023

Artificial Intelligence, UIUC CS 440, Graduate TA — Fall 2020

Service

Reviewer, CVPR (2022, 2023), NeurIPS (2023), ICLR (2023), ICML (2024) — 2022-Present

UIUC Vision Cluster, Student Administrator — 2022-Present

UIUC Vision Mini-Conference, Co-Organizer — April 2023