Ruipeng Liu

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GitHub: github.com/EmilioLrp

EDUCATION

Syracuse University Syracuse, New York, USA
Ph.D Candidate in Computer/Information Science and Engineering *Sept* 2022 –Expected *May* 2027
Advisor: Garrett Katz

Syracuse University Syracuse, New York, USA
Master of Science in Computer Science *Sept* 2020 –*May* 2022

Dalhousie University Halifax, Nova Scotia, Canada
Student Exchange Program *Sept* 2016 –*Jan* 2017

Hong Kong Baptist University Hong Kong SAR, China
Bachelor of Science (Hons.) in Computer Science *Sept* 2014 –*Jun* 2018

ACADEMIC EXPERIENCE

Syracuse University Syracuse, New York, USA
Ph.D Candidate *Sept* 2022 - present

- (In progress) Participate in the research of robust reinforcement learning used in robotics control of locomotion tasks.
- (In progress) Developing a new neural machine based on holographic reduced representations (HRR) that runs faster and more explainable comparing to a pure neural network. A paper is under review of *International Conference on Neurosymbolic Learning and Reasoning* (NeSy2025).
- Participated in the research of single-pass full capacity learning rule discovery. A paper is published in *International Conference on Machine Learning* (ICML2024).

Syracuse University Syracuse, New York, USA
Graduate Research Assistant *Sept* 2021- *Sept* 2022

- Participate in the research of finding the model that best describes the regulation relationships of genes in a given dataset.

Hong Kong Baptist University Hong Kong SAR, China
Summer Undergraduate Research Internship *Jun-Jul* 2017

- Assisted in the development of Genetic Algorithm used in solving Many-Objective Optimization Problems.

INDUSTRIAL EXPERIENCE

CMG FinTech Shenzhen, Guangdong, China
Bigdata Developing Assistant Engineer *Oct* 2018 - *Jun* 2020

- Java/Python backend development for web/mobile applications.

PUBLICATIONS

Published

1. **R. Liu**, B. He, N. Tahir, and G. E. Katz, "On the feasibility of single-pass full-capacity learning in linear threshold neurons with binary input vectors", *41st International Conference on Machine Learning*, ser. Proceedings of Machine Learning Research, vol. 235, PMLR, 21–27 Jul 2024, pp. 31 119–31 130.

2. **R. Liu**, Q. Qiu, S. Khan and G. E. Katz, "Linearithmic Clean-up for Vector-Symbolic Key-Value Memory with Kroneker Rotation Products", *19th International Conference on Neurosymbolic Learning and Reasoning*

Manuscript

1. X. Chen, **R. Liu** and G. E. Katz, "Explicit Lipschitz Value Estimation Enhances Policy Robustness Against Perturbation", *arXiv preprint arXiv:2404.13879*, 2024

Teaching

- **Teaching Assistant** at Syracuse University
  Graduate-Level Course Teaching Assistant
    - CIS675: Design and Analysis of Algorithms (Instructor: Dr. Asif Salekin, *Fall* 2022)
    - CIS667: Introduction to Artificial Intelligence (Instructor: Dr. Garrett Katz, *Fall* 2023)
- **Teaching Assistant** at Syracuse University
  Undergraduate-Level Course Teaching Assistant
    - CIS477: Introduction to Analysis of Algorithms (Instructor: Dr. Asif Salekin, *Spring* 2023)
    - CIS477: Introduction to Analysis of Algorithms (Instructor: Prof. Natarajan Gautam, *Fall* 2024)
    - CIS477: Introduction to Analysis of Algorithms (Instructor: Dr. Junzhe Zhang, *Spring* 2025)

Skills

- **Programming languages:** Python, Java (proficiency), shell(intermediate)
- **Software & Tools:** Pytorch, OpenAI Gymnasium, Numpy, Matplotlib, Latex, Linux, SSH
- **Frameworks:** Springboot, Flask

Languages

- **Chinese(Mandarin):** Native proficiency
- **English:** Full professional proficiency