Vishesh Prasad

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Research Interests

My research interests broadly lie in exploring the theoretical and algorithmic foundations of statistical machine learning, with a particular focus on reinforcement learning, optimization, and game theory. I am especially interested in studying multi-agent systems and learning in complex environments.

Education

- **University of Illinois Urbana-Champaign** *August 2021 - May 2025*
  B. S. Computer Engineering Urbana, IL
  - GPA: 3.81/4.00
  - Minors: Mathematics, Statistics, Econometrics

Research Experience

- **Undergraduate Senior Thesis** *August 2024 - Present*
  ECE at University of Illinois Urbana-Champaign
  - Utilizing reinforcement learning to summarize STEM manuscripts containing mathematical expressions and text
- **Undergraduate Research Assistant** *August 2023 - Present*
  Mathematical Language Processing Group (MLP), ECE at University of Illinois Urbana-Champaign [🌐]
  - Designed a novel graph algorithm and used LLMs with other machine learning techniques to construct derivation graphs (Preprint **[M.1]**)
  - Advisor: Dr. Nickvash Kani
- **Undergraduate Research Assistant** *August 2024 - Present*
  IBM-Illinois Discovery Accelerator Institute (IIDAI) [🌐]
  - Run-time and accuracy optimization of machine learning applications with a novel ML compiler
  - Advisors: Dr. Sasa Misailovic, Dr. Vikram Adve
- **Undergraduate Research Assistant** *June 2024 - November 2024*
  Software Engineering and Analysis Lab (SEAL), CS at Cornell University
  - Paper submitted to ISSTA 2025 - Machine Learning operations (MLOps) research study
  - Advisor: Dr. Saikat Dutta

Relevant Coursework

- **Graduate Coursework:** Statistical Reinforcement Learning, Algorithmic Market Microstructure
- **Upper-level Coursework:** Machine Learning, Stochastic Processes, Real Analysis, Financial Econometrics, Introduction to Optimization, Economic Game Theory, Data Science Analytics and Probabilistic Graph Models, Applied Parallel Programming, Introduction to Applied Econometrics, Artificial Intelligence, Digital Signal Processing, Computer Systems, Data Science and Engineering, Digital Systems Laboratory, Logic Synthesis, Advanced Competitive Algorithm Programming

Honors and Awards

- **Indira Gunda Saladi Research Scholarship** *August 2024*
  Department of Electrical and Computer Engineering at Illinois [🌐]
- **Illinois Scholars Undergraduate Research Scholarship** *May 2024*
  Illinois Scholars Undergraduate Research (ISUR) Program [🌐]
- **Edmund J. James Scholar** *August 2021 - May 2025*
  Department of Electrical and Computer Engineering at Illinois
- **Dean's List** *Fall 2023, Spring 2024*
  University of Illinois Urbana-Champaign

Teaching Experience

- **Undergraduate Teaching Assistant** *January 2024 - Present*
  University of Illinois Department of Electrical and Computer Engineering
  ◦ Undergraduate Teaching Assistant for CS/ECE 374 – Algorithms & Models of Computation
- **Head Teaching Assistant** *April 2024 - July 2024*
  University of Illinois Department of Electrical and Computer Engineering
  ◦ Lead the development of a new Engineering Economics Course with Dr. Can Bayram
- **Undergraduate Course Assistant** *September 2022 - September 2023*
  University of Illinois Department of Electrical and Computer Engineering
  ◦ Undergraduate Course Assistant for ECE 110 – Introduction to Electronics

Publications

M=Manuscript(Pre-Print)

[M.1] Prasad, et al. (2024). **Mathematical Derivation Graphs: A Task for Summarizing Equation Dependencies in STEM Manuscripts**. In *arXiv*.

Work Experience

- **Software Engineering Intern** *June 2024 - August 2024*
  GEICO *Chevy Chase, MD*
  ◦ Developed a knowledge graph using a native graph database to analyze thousands of cloud and on-premises entities
  ◦ Applied the graph for machine learning predictions and cost optimization, resulting in millions of dollars in savings
  ◦ Built a Node.js application for performance-optimized database interaction and visualization
- **Embedded Software Developer Intern** *May 2023 - December 2023*
  Lumentum *Dallas, TX*
  ◦ Added new features for a C# GUI by modifying device drivers to acquire greater controls of registers
  ◦ Involved in setting up new IAR toolchains for ARM processors utilizing Jenkins and debugging embedded C code
  ◦ Conducted field failure analysis support by replicating customer issues through microphonic tests

Additional Information

Languages: English (Fluent), Kannada (Fluent)
Interests: Chess, Reading, Woodworking, LEGO, Football, Cricket, Tenor Saxophone, Violin, Vehicles