Hoai-An Nguyen

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RESEARCH INTERESTS

My primary research interests include design and analysis of algorithms and complexity theory. I have been working on designing sublinear algorithms and establishing lower bounds in models motivated by big data such as sublinear-time and streaming. I have also been working on various graph problems including sparsification and linear systems solving.

EDUCATION

◊ **Carnegie Mellon University**
Ph.D. in Computer Science   Expected, May 2028
- Advisors: Yang (Richard) Peng and David Woodruff

◊ **Rutgers University, New Brunswick**
B.S. in Computer Science, B.A. in Economics   May 2023
- Thesis: *Asymptotically Optimal Bounds for Estimating H-Index in Sublinear Time with Applications to Subgraph Counting*
- Advisor: Sepehr Assadi
- *Summa cum laude* with highest honors in field, GPA: 4.00

HONORS AND AWARDS

◊ Carnegie Mellon University
  o Graduate Research Fellowship, National Science Foundation, 2024
◊ Rutgers University
  o Henry Rutgers Scholar Thesis Award, Rutgers School of Arts and Sciences, 2023
  o Nicholas V. Novielli Memorial Endowed Scholarship, Rutgers CS Department, 2023
  o Paul Robeson Scholar, Rutgers School of Arts and Sciences, 2023
  o Matthew Leydt Society, Rutgers University, 2023
  o Dean's Excellence Award, Rutgers School of Arts and Sciences, 2023
  o John C. Daniel Award, Rutgers Economics Department, 2023
  o Milton Friedman Distinguished Scholar, Rutgers Economics Department, 2023
  o Rizvi Research Award, Rutgers CS Department, 2022
  o Edward L. Shustak Memorial Scholarship, Rutgers Economics Department, 2022
  o Presidential Scholarship, Rutgers University, 2019 – 2023
  o Honors College Designation, Rutgers University, 2019 – 2023
  o National Merit Finalist Scholarship, Rutgers University, 2019 – 2023

PUBLICATIONS

◊ *Provable Reset-free Reinforcement Learning by No-Regret Reduction*
H. Nguyen, C. Cheng
International Conference on Machine Learning, **ICML 2023**
Also spotlighted at **AAAI RL4PROD 2023 Workshop**
Conference Version | Full Version

◊ *Asymptotically Optimal Bounds for Estimating H-Index in Sublinear Time with Applications to Subgraph Counting*
S. Assadi, H. Nguyen

International Conference on Approximation Algorithms for Combinatorial Optimization Problems, **APPROX 2022**
Presentation | Conference Version | Full Version

INDUSTRY RESEARCH EXPERIENCE

◊ **Microsoft Research, Reinforcement Learning Group**   Summer 2022
Research Intern
- Interned under Ching-An Cheng
- Carried out extensive literature review on reset-free reinforcement learning (RL), safe RL, and constrained MDPs
- Published *Provable Reset-free Reinforcement Learning by No-Regret Reduction* through ICML 2023

INDUSTRY EXPERIENCE

◊ **Facebook**   Summer 2021
Software Engineering Intern
- Created infrastructure to compare static and dynamic ads to detect problems and facilitate migration to the dynamic ad model
- Identified and collected data on broken fields and features within multi-ad ad sets
- Collaborated with the representation fix team to resolve identified issues
- Tools used: C++, Python, Pandas, Mercurial

◊ **Bank of America**   Summer 2020
Technology Analyst Intern
- Combined deep learning and image processing to explore facial recognition on live video streams
- Utilized machine learning and regression models to forecast ATM cash withdrawals
- Tools used: Python, OpenCV, Pandas, Torch, Sklearn, DLIB

TEACHING EXPERIENCE

◊ **Rutgers University, Department of Computer Science**   Sept 2020 – Present
Learning Assistant
- Courses: Data Structures, Introduction to Computer Science
- Lead recitations to facilitate active and collaborative learning
Head Learning Assistant   Jan 2021 – May 2022
- Assisted in the coordination of the Data Structures course
- Managed ~30 other learning assistants and created recitation problems
- Helped review and revise course assignments and exams

◊ **Rutgers University, Department of Computer Science** Spring 2022, Spring 2023
Teaching Assistant
- Course: Design and Analysis of Computer Algorithms
- Ran recitations and office hours to assist students
- Wrote problems for homework assignments and exams

◊ **Other**
Private Tutor   Sept 2019 – May 2021
  ▪ Tutored college students in Physics, Calculus, and Computer Science
Teaching Assistant   Sept 2017 – May 2019
  ▪ Worked at a Kumon Learning Center
  ▪ Assisted K-12 students in math and English

LEADERSHIP

◊ **Carnegie Mellon University Women@SCS TechNights**   2023
  - Planning a session to teach middle school girls in the greater Pittsburgh area the basics of error-correcting codes
  - Will run the error-correcting codes TechNight in November with a co-lead

◊ **Rutgers Undergraduate Student Alliance of Computer Scientists**
  Mentor   Sept 2020 – Present
  - Advise a small pod of CS students to help them navigate the major and recruiting
  Outreach Director   May 2020 – May 2021
  - Organized speaker and company events centered around CS research and software engineering
  - Facilitated student interaction with CS faculty, graduate students, and alumni
  - Collaborated with the Women in Computer Science club to promote diversity
  Education Chair   Jan 2020 – May 2020
  - Helped organize hacker hours which brought industry speakers to lead participants through a short project

OTHER ACTIVITIES

◊ Google's CS Research Mentorship Program (2023A)
◊ Fostering dogs through Paws Across Pittsburgh