Bhargav Samineni

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Research Interests

I am broadly interested in the intersection of Mathematics and Computer Science, particularly in the development of approximation algorithms for NP-hard problems and the theory and practice of developing algorithms for discrete optimization problems in scalable models of computation.

Education

The University of Texas at Austin — Austin, TX
M.Sc. in Computer Science — *08/2023 – Expected 05/2025*

New Jersey Institute of Technology — Newark, NJ
B.Sc. in Computer Science & Mathematical Sciences | Summa Cum Laude — *09/2019 – 05/2022*

Research Experience

Pacific Northwest National Laboratory — Richland, WA
Research Intern | Advisors: Dr. Mahantesh Halappanavar, Dr. S M Ferdous — *08/2022 – 06/2023*

- Developed and implemented new approximation algorithms for the Max Weight b-Matching problem in bipartite graphs using auction based approaches.
- Researched and implemented streaming algorithms in C++ for the k-Disjoint Matching problem with applications in reconfigurable datacenter networks.

Department of Computer Science, NJIT — Newark, NJ
Research Assistant | Advisor: Dr. Baruch Schieber — *01/2020 – 05/2022*

- Studied an offline scheduling problem motivated by batteryless IoT devices where energy harvesting and job execution are done in a mutually exclusive manner with the objective to maximize job throughput. Worked on NP-Hardness proofs for various cases of the problem.

Institute for Pure and Applied Mathematics, UCLA — Los Angeles, CA
Research Intern | Advisors: Dr. Laurent White (AMD), Kyung Ha (UCLA) — *06/2021 – 08/2021*

- Researched the use of physically informed neural networks (PINNs) in improving the extrapolation capabilities of traditional ML models and in acting as surrogate models to physics-based simulators.
- Implemented PINNs using TensorFlow to model multiple target equations while extrapolating in space and to model acoustic wave propagation while extrapolating in time.

Manuscripts

[M1] S M Ferdous, **Bhargav Samineni**, Alex Pothen, Mahantesh Halappanavar, and Bala Krishnamoorthy. "Streaming Algorithms for Weighted k-Disjoint Matchings". In submission.

Conference Publications

[C1] Baruch Schieber, **Bhargav Samineni**, and Soroush Vahidi. "Interweaving Real-Time Jobs with Energy Harvesting to Maximize Throughput". *17th International Conference and Workshops on Algorithms and Computation (WALCOM 2023).* **Best Paper Award, Invited to Algorithmica Special Issue**.

Workshop Publications

[W1] David Davini, **Bhargav Samineni**, Benjamin Thomas, Amelia Tran, Cherlin Zhu, Kyung Ha, Ganesh Dasika, and Laurent White. "Using Physics-Informed Regularization to Improve Extrapolation Capabilities of Neural Networks". *4th Workshop on Machine Learning and the Physical Sciences, NeurIPS (ML4PS 2021).*

Presentations

[P1] David Davini, **Bhargav Samineni**, Benjamin Thomas, Amelia Tran, and Cherlin Zhu. "Using Physics-Informed Regularization to Improve Extrapolation Capabilities of Neural Networks". *AMS Contributed Paper Session on Computer Science, AI, and Operations and Undergraduate Poster Session at JMM 2022.* Apr. 2022.

Professional Activities

Additional Referee, 18th Workshop on Approximation and Online Algorithms (WAOA 2020)

Technical Skills

Programming Python, C/C++, Bash
Other Git, Linux, LaTeX

Awards/Honors

Albert Dorman Honors Scholar, NJIT *2019*
President's Medal for Academic Excellence, NJIT *2022*

Work Experience

Sagitec Solutions Sacramento, CA
Jr. Software Engineer Intern *06/2020 – 08/2020*

- Maintained and supported the project codebase, including fixing over 60 problem incidence reports and refactoring code using C# and SQL.
- Developed various functionalities based on client specifications for the user web portal.