

Daniel DeLayo

Fourth Year Computer Science Ph.D. Student

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Employment History

- 2019 – 📌 **Research Assistant**, Stony Brook University, *Computer Science*.
- 2021 – 2024 📌 **Intern**, Sandia National Labs, *Cyber Security & Analytics*.
- 2018 – 2018 📌 **Research Assistant**, Stony Brook University, *Physics*.

Education

- 2021 – 📌 **Ph.D. Student, Computer Science**, Stony Brook University.
Research Interests: *Parallel Algorithms, Cache and Memory Management, Theory & Practice*
Advisor: *Michael A. Bender*
- 2017 – 2021 📌 **B.S. Computer Science**, Stony Brook University.
Honors: *Summa Cum Laude, Honors College, Honors Computer Science*.
GPA: 3.95/4.0

Research Interests

I design efficient and practical parallel algorithms, and I often implement them too; I straddle the line between algorithm theory and implementation. Algorithm performance and scaling is often bottlenecked by memory, whether it's memory movement in a cache or data contention in a parallel system. Through rigorous analysis and exhaustive performance engineering, I solve hard theoretical problems and build state of the art systems.

Research Publications


Journal Articles

- 1 D. Tench, E. West, V. Zhang, M. A. Bender, A. Chowdhury, **D. DeLayo**, J. A. Dellas, M. Farach-Colton, T. Seip, and K. Zhang. Graphzeppelin: how to find connected components (even when graphs are dense, dynamic, and massive). *ACM Transactions on Database Systems*, 49:1–31, 3, Sept. 2024. ISSN: 0362-5915. 🔗 DOI: 10.1145/3643846.
- 2 J. Vorobyeva, **D. R. DeLayo**, M. A. Bender, M. Farach-Colton, P. Pandey, C. A. Phillips, S. Singh, E. D. Thomas, and T. M. Kroege. Using advanced data structures to enable responsive security monitoring. *Cluster Computing*, 25:2893–2914, 4, Aug. 2022. ISSN: 1386-7857. 🔗 DOI: 10.1007/s10586-021-03463-5.




Conference Proceedings

- 1 M. A. Bender, **D. DeLayo**, B. C. Kuszmaul, W. Kuszmaul, and E. West. Increment - and - freeze: every cache, everywhere, all of the time. In *Proceedings of the 35th ACM Symposium on Parallelism in Algorithms and Architectures*, pages 129–139. ACM, June 2023. ISBN: 9781450395458. 🔗 DOI: 10.1145/3558481.3591085.
- 2 **D. DeLayo**, K. Zhang, K. Agrawal, M. A. Bender, J. W. Berry, R. Das, B. Moseley, and C. A. Phillips. Automatic hbm management. In *Proceedings of the 34th ACM Symposium on Parallelism in Algorithms and Architectures*, pages 147–159. ACM, July 2022. ISBN: 9781450391467. 🔗 DOI: 10.1145/3490148.3538570.





Books and Chapters

- 1 D. Tench, E. T. West, K. Zhang, M. A. Bender, **D. DeLayo**, M. Farach-Colton, G. Gill, T. Seip, and V. Zhang. *Exploring the landscape of distributed graph sketching*. In *2025 Proceedings of the Symposium on Algorithm Engineering and Experiments (ALENEX)*. Society for Industrial and Applied Mathematics, Jan. 2025, pages 133–146.  DOI: 10.1137/1.9781611978339.11.





Awards

- 2024  **NSF Student Travel Grant**, Symposium on Parallelism in Algorithms and Architectures (SPAA).
2023  **CLSAC Invited Student Poster**, Chesapeake Large-Scale Analytics Conference.
2022  **GAANN Fellowship**, Stony Brook University.





Talks and Presentations

- 2024  **PhD Prelim**, Increment-and-Freeze: Every Cache, Everywhere, All of the Time.
2023  **CLSAC**, Stateful Streaming with External Memory On Workstations.
2022  **SPAA**, Automatic HBM Management: Models and Algorithms.
 **MAPSP**, Automatic HBM Management: Models and Algorithms.

Teaching Experience

- 2025  **Honors Algorithms**, Probability Lecture.
2023  **Graduate System Security**, Teaching Assistant.
2021  **Honors Algorithms**, Teaching Assistant.
2018  **Intro to Computer Science**, Teaching Assistant.

Professional Service

- 2025  **Peer Review**, SPAA.
2024  **Artifact Evaluation**, ALENEX.
2023  **Peer Review**, ESA.
2022  **Peer Review**, IPDPS.