

Education

Aug. 2023 – May 2027 **B.S. Statistics & Computer Science**, *University of Illinois Urbana-Champaign*, GPA: 3.96 / 4.00
Minor in Physics

Experience

- May 2025 – Present **Undergraduate Researcher**, *Siebel School of Computing and Data Science*
Graph clustering and community search at scale github.com/IanChenUIUC/community_search
- Parallelized Shellstruct, a local clustering algorithm, with a work-efficient OpenMP implementation — the first to run on billion-edge networks.
 - Designed SteinerKCore for local clustering and proved its cost grows logarithmically rather than linearly in the number of queries. Peak speedup over the fastest prior method reached 10× at 10 queries and 84× at 100.
 - Eliminated up to 4× run-to-run variance by pre-warming the page cache, making benchmarks reproducible.
 - Designed and ran the experiments establishing CVC, a new cluster ensemble method, as the most accurate measured, and showing that connectivity post-processing improves stochastic block models, a widely used clustering method.
- May 2024 – Aug. 2024 **Software Engineer Intern**, *Maven Optronics*
- Built a system for tracing finished mini-LED circuit boards to raw materials by populating MySQL databases.
 - Replaced an engineer updating each factory machine by USB with a one-upload .msi rollout to all machines.

Publications

- 2026 Vu-Le, T.-A., Lamy, J. A. C., Alessi, T., **Chen, I.**, et al. Dense Subgraph Clustering and a New Cluster Ensemble Method. *CNA*. 10.1007/978-3-032-16719-4_3.
- 2026 Vu-Le, T.-A., Park, M., **Chen, I.**, Lamy, J. A. C., et al. Improving community detection with CVC, a new cluster ensemble method. *Appl. Netw. Sci.* 10.1007/s41109-026-00809-z.
- 2025 Vu-Le, T.-A., Park, M., **Chen, I.**, Warnow, T. Using stochastic block models for community detection. *Appl. Netw. Sci.* 10.1007/s41109-025-00747-2.
- 2026 **Chen, I.**, Yi, H., Sharma, A., Warnow, T., et al. Improved methods for k-core community search. In Preparation.
- 2026 Park, M., Yi, H., **Chen, I.**, Warnow, T., et al. Modeling citations and cartels. Preprint. 10.21203/rs.3.rs-9270520/v1.

Teaching & Service

- Fall 2024 – Fall 2025 **Undergraduate Course Assistant**, *University of Illinois Urbana-Champaign*
- CS 473 – Algorithms (Fall 2025)
 - CS 233 – Computer Architecture (Fall 2024, Spring 2025)
- Fall 2025 – Present **Admin**, *ACM@UIUC Special Interest Group in Math and Algorithms (SIGma)*
- Presented graph algorithms including ρ -stepping (parallel shortest-paths) and Karger–Klein–Tarjan (randomized MST).

Technical Skills

High Performance Computing: OpenMP, ParlayLib, Slurm, Apptainer, numba, Cython, pybind11
Profiling: perf, valgrind, gdb, hyperfine, Tachyon sampling profiler
Languages: C++, Python, Go, R, Rust, SQL

Relevant Coursework

Graduate: High-Speed and Programmable Networks; Advanced Performance Engineering; Computer Vision; Computational Biology

Upper division: Machine Learning; Compiler Construction; Programming Languages; Distributed Systems; Numerical Analysis; Communication Networks; Operating Systems; Computer Organization; Algorithms I & II