Zane Fink

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zwfink

Education

2016–2020 **B.S. Computer Science**, *Northern Arizona University*.
GPA: 3.64

Experience

May 2019–Present **Undergraduate Research Assistant**, *Community-Aware Networks & Information Systems Lab (CANIS-Lab)*, NAU.

- Conducted research on low-bandwidth, long-ranged network architectures for resource-constrained environments.
- Designed architecture at the application/transport layers to support delay-tolerant user access to online services.
- Supervisor: Morgan Vigil-Hayes

Jan 2019–Present **Undergraduate Research Assistant**, *Gowanlock Lab*, NAU.

- Investigating the acceleration of systems utilizing response-based cryptography using the GPU.
- Investigated hybrid algorithms to accelerate memory-bound algorithms on heterogeneous CPU/GPU platforms.
- Implemented Hybrid CPU/GPU multiway merge and linear scan, achieving up to $2.50\times$ speedup with low load imbalance.
- Supervisor: Michael Gowanlock

March 2018–Present **Undergraduate Research Assistant**, *The Pathogen and Microbiome Institute*, NAU.

- Designed and implemented algorithms for efficient analyses to comprehensively determine an individual's viral exposure history. This algorithm achieves similar levels of coverage of the human virome with $37 - 54\%$ fewer probes than other algorithms.
- Proposed and received funding for the *PepSIRF* software package implementing these algorithms.
- Engaged in outreach activities to attract more students to participate in undergraduate research.
- Supervisor: Jason Ladner

Publications

- Gowanlock, M., **Fink, Z.**, Karsin, B., & Wright, J. Accelerating Memory-Bound Database Primitives on Heterogeneous CPU/GPU Architectures. Information Systems, under review.

- Gowanlock, M., Karsin, B., **Fink, Z.** & Wright, J. (2019) Accelerating the Unacceleratable: Hybrid CPU/GPU Algorithms for Memory-Bound Database Primitives,in Proceedings of the 15^{th} *International Workshop on Data Management on New Hardware* in Conjunction with *ACM SIGMOD/PODS 2019*, Amsterdam, NL.

Posters

- **Zane Fink**, Jordan Wright, & Michael Gowanlock. The Acceleration of Algorithms With Low Compute to Memory Access Ratios on Heterogeneous CPU/GPU Platforms. Northern Arizona Planetary Science Alliance STEM Poster Session.
- **Zane Fink** & Jason Ladner. (2019) Panviral PepSeq: A Highly Multiplexed Serological Diagnostic. 58^{th} Annual ASM Regional Branch Conference.

Grants and Awards

April 2019 **Hooper Undergraduate Research Award**, $\$3,500$.
Introducing PepSIRF: PEPtide-Based Serological Immune Response Framework

March 2019 **Jean Shuler Research Mini-Grant**, $\$500$.

Employment History

June 2017–Jan 2018 **System Support Technician**, *Northern Arizona University*.
- Support inventory management, software, printers, virtual infrastructure, and miscellaneous hardware.
- Supported the Cline Library MakerLab, involving processing 3D prints and advising patrons on how to make sure their parts print properly

Teaching Experience

August 2019–December 2019 **CS-499: Principles of Parallel Programming Grader**, *Northern Arizona University*.
- Read parallel programs to find race conditions and incorrect behavior.
- Helped students understand mistakes by providing feedback and fixing segmentation faults in submitted assignments.
- Submitted the grade each student earned as determined by a rubric.

Jan 2018–May 2018 **Computer Science *II* Lab Instructor**, *Northern Arizona University*.
- Presented and explained lab information to a class of 40 students.
- Explained technical details and helped guide students toward the proper solutions.
- Held office hours to further advance student understanding.

Extracurricular Activities

Jan 2019–Present **Student Representative, Academic Integrity Hearing Board**, *NAU's College of Engineering, Informatics, and Applied Sciences*.

- Listened to the cases of students who have either appealed alleged academic integrity violations, or who have been referred to the AIHB for multiple violations.
- Helped determine appropriate course of action for students who are found in violation of NAU's academic integrity policy.