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TYLER ESTRO

I am a Ph.D. Candidate in Computer Science at Stony Brook University (SBU) with Professor Erez Zadok as my advisor, a Research Assistant at the File Systems and Storage Lab, and a member of SBU's Institute for AI-Driven Discovery and Innovation. The primary focus of my research has been the efficient exploration and optimization of multi-tier storage caching systems, but I have also published in other areas such as performance modeling, visualization, artificial intelligence, and even in the life sciences domain. I am currently researching disaggregated memory systems and the latest Compute Express Link (CXL) technology.

SKILLS

- **Programming Languages**

  Bash, C, C++, Python
- **Software**

  FIO, OpenCAS, Pandas & Polars, PyMimircache, QEMU

EDUCATION

- **Ph.D. in Computer Science. Stony Brook University, NY (May 2018 – Current)**

  Analysis of Algorithms, Computer Architecture, Compiler Design, Discrete Mathematics, Fundamentals of Data Science, Operating Systems, Logic in Computer Science, Systems Security, Theory of Computation.
- **B.S. in Software Technology. Farmingdale State College, NY (May 2015)**
- **A.S. in Business Administration. Suffolk County Community College, NY (May 2008)**

TEACHING EXPERIENCE

- **File Systems and Storage Lab, Stony Brook University, NY (May 2018 – Current)**

  Every semester I have advised and mentored 1-5 graduate or undergraduate students from our lab or external institutions (Harvey Mudd and Pomona College) that are interested in independent research or fulfilling their program's capstone project course.
- **Graduate Teaching Assistant, Stony Brook University, NY (2017 - 2019)**

  CSE 219: Computer Science III, CSE 506: Operating Systems, CSE 564: Visualization, XSEDE HPC Workshop: Big Data

WORK EXPERIENCE

- **File Systems and Storage Lab, Stony Brook University, NY**

  Research Assistant, May 2018 – Present

  My main research topics are multi-tier storage caching systems, performance modeling, visualization, artificial intelligence, disaggregated memory, and CXL technology.

- **Institute for Advanced Computational Science, Stony Brook University, NY**

  High Performance Computing Assistant, Aug 2017 – May 2018

  Provided technical support to users in areas such as parallelizing serial applications, modularizing environment configurations, software package installation and maintenance, debugging code, and education on HPC topics.
- **Lake Grove Diner, NY**

  Waiter, 2012 – 2017
- **Various Service Industry Jobs, 2006 – 2012**

PUBLICATIONS

- **Smart Starts: Accelerating Convergence Through Uncommon Region Exploration**

  Xinyu Zhang, Mario Antunes, **Tyler Estro**, Erez Zadok, Klaus Mueller

  The Genetic and Evolutionary Computation Conference (GECCO), to appear July 2025 (Short paper & poster)
- **Kneeliverse: A Universal Knee-Detection Library for Performance Curves**

  Mario Antunes, **Tyler Estro**, Pranav Bhandari, Anshul Gandhi, Geoff Kuenning, Yifei Liu, Carl Waldspurger, Avani Wildani, Erez Zadok

  SoftwareX, May 2025
- **Accelerating multi-tier storage cache simulations using knee detection**

  Tyler Estro, Mario Antunes, Pranav Bhandari, Anshul Gandhi, Geoff Kuenning, Yifei Liu, Carl Waldspurger, Avani Wildani, Erez Zadok

  Performance Evaluation Journal, (PEVA '24), February 2024
- **Persistent Memory Research in the Post-Optane Era**

  Peter Desnoyers, Ian Adams, **Tyler Estro**, Anshul Gandhi, Geoff Kuenning, Mike Mesnier, Carl Waldspurger, Avani Wildani, Erez Zadok

  Proceedings of the 1st Workshop on Disruptive Memory System (DIMES '23), October 2023
- **Guiding Simulations of Multi-Tier Storage Caches Using Knee detection**

  Tyler Estro, Mario Antunes, Pranav Bhandari, Anshul Gandhi, Geoff Kuenning, Yifei Liu, Carl Waldspurger, Avani Wildani, Erez Zadok

  31st IEEE International Symposium on the Modeling, Analysis, and Simulation of Computer and Telecommunication Systems (MASCOTS '23), October 2023
- **PC-Expo: A Metrics-Based Interactive Axes Reordering Method for Parallel Coordinate Displays**

  Anjul Tyagi, **Tyler Estro**, Geoff Kuenning, Erez Zadok, Klaus Mueller

  IEEE Conference on Visualization and Visual Analytics (VIS '22), October 2022
- **Social Sensors for Wildlife: Ecological Opportunities in the Era of Camera Ubiquity**

  Alex Borowicz, Heather Lynch, **Tyler Estro**, Catherine Foley, Bento Gonçalves, Katelyn

Herman, Stephanie Adamczak, Ian Stirling, and Lesley Thorne
Frontiers in Marine Science, May 2021

- **Analyzing the distribution fit for storage workload and Internet traffic traces**
  Muhammad Wajahat, Aditya Yele, **Tyler Estro**, Anshul Gandhi, and Erez Zadok
  Performance Evaluation Journal (PEVA '20), September 2020
- **Desperately Seeking ... Optimal Multi-Tier Cache Configurations**
  Tyler Estro, Pranav Bhandari, Avani Wildani, and Erez Zadok

  12th USENIX Workshop on Hot Topics in Storage (HotStorage '20), July 2020
- **Distribution Fitting and Performance Modeling for Storage Traces**
  *****Won Best Paper Award!***
  Muhammad Wajahat, Aditya Yele, **Tyler Estro**, Anshul Gandhi, and Erez Zadok
  27th IEEE International Symposium on the Modeling, Analysis, and Simulation of Computer and Telecommunication Systems (MASCOTS '19), October 2019
- **ICE: Interactive Configuration Explorer for High Dimensional Categorical Parameter Spaces**
  Anjul Tyagi, Zhen Cao, **Tyler Estro**, Klaus Mueller, and Erez Zadok
  IEEE Conference on Visual Analytics Science and Technology (VAST '19), October 2019

POSTERS

- **Computer vision for the detection and segmentation of penguin colonies in satellite imagery**
  Tyler Estro, Hieu Le, Bento Goncalves, Brad Spitzbart, Dimitris Samaras, Heather J. Lynch
  Microsoft's AI for Good Summit, October 2019
- **Graphs Are Not Enough: Using Interactive Visual Analytics in Storage Research**
  Zhen Cao, **Tyler Estro**, Geoff Kuenning, Klaus Mueller, Anjul Tyagi, and Erez Zadok
  11th USENIX Workshop on Hot Topics in Storage (HotStorage '19), July 2019
- **Towards Better Understanding of Black-box Auto-Tuning: A Comparative Analysis for Storage Systems**
  Zhen Cao, **Tyler Estro**, Vasily Tarasov, Sachin Tiwari, Erez Zadok
  2018 USENIX Annual Technical Conference (ATC '18), July 2018

PEER REVIEWS

- **ACM Transactions on Storage (TOS), 2024**

AWARDS

- **Computer Science, Engineering, and Mathematics Scholarship (CSEMS), 2012**
  Advised by Professor Ben Chen.
- **Battle of the Brains Programming Competition, 2012**
  First place for designing an educational GUI application to assist chemistry students.

CITIZENSHIP & LANGUAGE

- Born United States Citizen and lifelong New York State Resident.
- Native English speaker. Beginner Japanese (actively learning).