CV

ZIYANG JIAO

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Washington University in St. Louis (WUSTL) **08/2019 – 08/2020**

Major: Computer Science and Engineering

GPA: 4.0 Ranking: NA

Degree: Master of science in computer science (transferred to SU)

Syracuse University (SU) **08/2020 – Now**

Major: Computer and Information Science and Engineering

GPA: 3.7 Ranking: NA

Degree: Ph.D. in computer science (expected in 2024)

Publications

Ziyang Jiao, Janki Bhimani, and Bryan S. Kim. *Wear Leveling in SSDs Considered Harmful*. In ACM Workshop on Hot Topics in Storage and File Systems, 2022 [Samsung Best Paper Award]

Ziyang Jiao and Bryan S. Kim. *Generating Realistic Wear Distributions for SSDs*. In ACM Workshop on Hot Topics in Storage and File Systems, 2022

Skills & Tools

Languages: C, C++, Python
Tracing: BPF(BCC Tools, bpftrace), blktrace, blkparse, btrecord, btreplay
SSD development platforms: FTLSim, Amber, FEMU, MQSim
File system: LFS, f2fs, f2fs-tools, fio, geriatrix, impression

WORK EXPERIENCE

Syracuse University, Research Assistant, Syracuse, NY Aug 2020 - Now

- Storage Systems Research. Currently working on NSF grant – CPR for Flash-Based Storage Systems under Prof. Bryan Kim.
- Capacity-variant storage systems: exploiting the tradeoffs among capacity, performance, and reliability (CPR) and demonstrating the effectiveness of a capacity variant SSD.
- Self-learning systems: imbuing intelligence to the devices so that they can self-learn, self-configure, and self-manage.
- Next-generation storage stack with key-value / ZNS devices: exploring the design of a storage stack using key-value / ZNS devices instead of traditional block devices.

Washington University in St. Louis, Teaching Assistant, St. Louis, MO Jan 2020 – May 2020

- Course Link: CSE 417T - Introduction to Machine Learning
- Advisor: Prof. Chien-Ju Ho
- Topics: Generalization in finite and infinite hypothesis spaces; Model complexity, the VC bound, the bias-variance tradeoff; Linear models: the perceptron, regression, logistic regression; Nonlinear transformations of data; The problem of overfitting; Modern supervised learning techniques, including decision trees, neural networks, nearest neighbor methods, support vector machines, boosting, and random forests.

Chinese Academy of Sciences(CAS), Research Assistant, BeiJing Nov 2018 - Jan 2019

- Laboratory for Face Recognition Based on Matlab+PCA+SVM.
- Advisor: Prof. Chao Liu
- Designing and building data pre-processing and training system
- Dataset: ORL face database + Real face image data
- Feature Engineering: Correlation analysis + PCA
- Model: NN, SVM, GAN

ACADEMIC EXPERIENCES

Generating Realistic Wear Distributions for SSDs Aug 2021 – Now

Summary: Building Fast-Forwardable SSD, a machine learning-based SSD aging framework that generates representative future wear-out states.

- Research on SSD aging and fail-slow symptoms.
- Quantify the low-performance variation under various I/O traces.
- Develop FF-SSD, an ML-based framework for SSD aging, trace replay acceleration, and drive failure estimation.

Capacity Performance Reliability(CPR) for Flash-Based Storage Systems Oct 2020 – Sep 2023

Summary: Exploiting tradeoffs among CPR and designing a capacity-variant interface that allows the SSD to maintain performance while gracefully reducing the capacity.

- link:nsf.gov/awardsearch/showAward?AWD_ID=2008453
- Quantify the error-induced performance degradation.
- Build a capacity-variant system and demonstrate the effectiveness of a capacity variant SSD.
- Develop new filesystems and RAID systems to evaluate how capacity-variance can be extended to a heterogeneous set of SSDs.

Creating Synergies between Memory, Disk and Log in Log Structured KV Stores Aug 2020 – Dec 2020

Summary: Improving the background I/O performance on LevelDB – an open sourced key-value store by Google

- Study on LevelDB and analyze performance under different configurations
- Implement techniques discussed in TRIAD on LevelDB
- Smarter categorizing and scheduling to amortize background IO costs in LevelDB
- Self-adaptive database adjusting to different workloads