Shunyu (David) Yao

EDUCATION

Beijing Normal University - Hong Kong Baptist University United International College, Zhuhai, China
Bachelor of Science (B.S.), Computer Science and Technology
September 2014 - June 2018 cGPA: 3.32/4.00 (Top 4)

University of Virginia, Charlottesville, VA, United States
Master of Computer Science (M.CS.), Computer Science
September 2018 - August 2020 cGPA: 3.303/4.00

Virginia Tech, Blacksburg, VA, United States
Ph.D. Student, Computer Science
August 2020 - May 2025 (Expected)

PUBLICATION

Shunyu (David) Yao, Muhammad Ali Gulzar, Liqing Zhang, Ali R. Butt, **Towards a Serverless Bioinformatics Cyber-Infrastructure Pipeline,** *In The 1st Workshop On High Performance Serverless Computing, 2021 (in conjunction with ACM HPDC 2021)*

PROJECT EXPERIENCE

Final Year Project: JavaScript Interpreter in Java
BNU - HKBU United International College **July 2017 - March 2018**

Research Assistant: Partitioned Parallel Processing Spaces (PCubeS)
University of Virginia **October 2018 - May 2019**

- Helped in developing and debugging a parallel processing compiler that unifies and makes usage of different low-level hardware to expose more processing spaces to parallel programmers
- Translated the benchmarking serial C version of LULESH hydrodynamic model developed by Lawrence Livermore National Laboratory into the target language developed together with the Partitioned Parallel Processing Spaces type architecture, to test performance of the compiler

Thesis: Checkpoint/Restart Containerized GPU Tasks
University of Virginia (Advisor: Dr. Andrew Grimshaw) **September 2019 - May 2020**

- Integrating Singularity container with user space checkpoint/restore tool CRIU to enable runtime container checkpoint/restore onto persistent storage
- Performing literature review on existing attempts to capture out-of-kernel GPU states during runtime, especially the driver state retrieval

Checkpointing HPC Applications with Persistent Memory
University of Virginia **October 2019 - December 2019**

- Using PMDK to checkpoint LULESH hydrodynamic model, comparing it with checkpointing back to disk
- Comparing effects of checkpointing in different partition spaces

CyberInfrastructure for Waterborne Antibiotic Resistance Risk Surveillance
Distributed Systems & Storage Laboratory - Virginia Tech **September 2020 - Current**

- Refactoring the existing domain-specific Machine Learning pipeline into smaller containerizable components
- Enabling flexible arbitrary pipeline by turning components into serverless microservices.

WORK EXPERIENCE

Distributed Systems Intern
Lancium **June 2019 - August 2019**

- Developed Docker/Singularity task containerization and automation using Bash, Slurm and JSDL
- Participated in configuration of HPC infrastructures, such as node deployment, power management to reduce HPC carbon footprint, using Ansible, Slurm

Graduate Teaching Assistant
Virginia Tech **September 2020 - Current**
- Teaching Assistant for Computer Organization (CS2506)

RELEVANT COURSES

Undergraduate Level: Computer Organization, Data Structures & Algorithms, Database Systems, Data Communications & Networking, Numerical Computation, Operating Systems, Cloud Computing, Compiler Construction, Computer Graphics

Graduate Level: Computer Architecture, Software Testing, Compilers, Parallel Computing, Operating Systems, Learning Theory, Software Security, Machine Learning, Data-centric Design (Advanced Computer Architecture), Multiprocessor Programming

SKILLS

Programming Languages: Java, C/C++, JavaScript, Python, Matlab, Bash, JSDL, MPI, CUDA
Frameworks: Ansible, Slurm, Docker, Singularity, ANTLR4, JCup
Languages: English, Mandarin (Native Speaker)