Benjamin Carver

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Github: Scusemua

Education

2021–2025 Anticipated — **George Mason University**,
Computer Science, Ph.D., GPA – 4/4.

2021–2021 — **George Mason University**,
Computer Science, M.Sc., GPA – 4/4.
Thesis: *Wukong: A Fast, Cost-Effective, and Easy-to-Use Serverless DAG Engine.*

2016–2020 — **George Mason University**,
Computer Science, B.Sc., GPA – 4/4.

Employment

May 2022 - August 2022 — **Microsoft Research Intern**, Microsoft Research Lab - Redmond.
Under the mentorship of Dr. Rodrigo Fonseca, assisted in the design, development, testing, and evaluation of new microsecond-latency serverless stack.

Spring 2019 - Ongoing — **Undergraduate/Graduate Research Assistant**, George Mason University.
Conducting research under the direction of Dr. Yue Cheng (University of Virginia) and Dr. Songqing Chen (George Mason University).

Spring 2018 - Fall 2018 — **Undergraduate Teaching Assistant**, George Mason University.
Assisted students with assignments and projects. Held review sessions for exams.

September 2016 - July 2020 — **Software Developer**, BRTRC Federal Solutions.
Worked as a development team member to extend a Geographic Information Systems (GIS) desktop application using Windows Presentation Foundation and C#/.NET:
- Implemented a user interface and memory-efficient algorithms for processing and displaying GIS data.
- Optimized algorithms for creating and displaying user-defined contour lines to produce realistic terrain maps.
- Decreased application load time by a factor of five and memory footprint by 70%.
- Implemented a system for manipulating, serializing, and viewing 3D models.

June - August 2016 — **Summer Intern**, BRTRC Federal Solutions.
Worked as a development team member to extend a .NET desktop application.

Publications

Conference Papers

[ASPLOS '23] **Benjamin Carver, Runzhou Han, Jingyuan Zhang, Mai Zheng, Yue Cheng**, *λFS: Elastically Scaling Distributed File System Metadata Service using Serverless Functions*, ACM International Conference on Architectural Support for Programming Languages and Operating Systems **(ASPLOS 2023)**.

[VLDB '23] **Ao Wang, Jingyuan Zhang, Xiaolong Ma, Benjamin Carver, Ali Anwar, Lukas Rupprecht, Dimitrios Skourtis, Vasily Tarasov, Feng Yan, Yue Cheng**, *InfiniStore: Elastic Serverless Cloud Storage*, International Conference on Very Large Databases **(VLDB 2023)**.

[SOCC '20] **Benjamin Carver, Jingyuan Zhang, Ao Wang, Ali Anwar, Panruo Wu, Yue Cheng**, *Wukong: A Scalable and Locality-Enhanced Framework for Serverless Parallel Computing*, ACM Symposium on Cloud Computing **(ACM SoCC'20)** (AR: 35/143 = 24.4%).

[PDSW '19] **Benjamin Carver, Jingyuan Zhang, Ao Wang, Yue Cheng**, *In Search of a Fast and Efficient Serverless DAG Engine*, International Parallel Data Systems Workshop **(PDSW 2019)**.

Posters

[ASPLOS '24] **Benjamin Carver, Runzhou Han, Jingyuan Zhang, Mai Zheng, Yue Cheng**, *λFS: Elastically Scaling Distributed File System Metadata Service using Serverless Functions*, ACM International Conference on Architectural Support for Programming Languages and Operating Systems **(ASPLOS 2024)**.

[VLDB '23] **Ao Wang, Jingyuan Zhang, Xiaolong Ma, Benjamin Carver, Ali Anwar, Lukas Rupprecht, Dimitrios Skourtis, Vasily Tarasov, Feng Yan, Yue Cheng**, *InfiniStore: Elastic Serverless Cloud Storage*, International Conference on Very Large Databases **(VLDB 2023)**.

[SOCC '20] **Benjamin Carver, Jingyuan Zhang, Ao Wang, Ali Anwar, Panruo Wu, Yue Cheng**, *Wukong: A Scalable and Locality-Enhanced Framework for Serverless Parallel Computing*, ACM Symposium on Cloud Computing **(ACM SoCC'20)**.

Honors & Awards

August 2023 **VLDB2023 NSF Travel Grant**.

May 2021 **George Mason University Presidential Scholarship Award**.

May 2021 **Distinguished Academic Achievement Award**.

May 2020 **Distinguished Undergraduate Research Award**.

May 2020 **Distinguished Academic Achievement Award**.

Talks

April 2024 **Paper presentation**, *ACM International Conference on Architectural Support for Programming Languages and Operating Systems (ASPLOS'24)*.

Aug 2023 **Paper presentation**, *49th International Conference on Very Large Data Bases (VLDB'23)*.

Jun 2023 **Workshop presentation**, *2nd International Workshop on Serverless Computing Experience (WOSCx2)*.

Mar 2023 **Guest lecturer**, *DS 5110 Big Data Systems*, Data Science @ UVA.

Oct 2020 **Paper presentation**, *ACM Symposium on Cloud Computing 2020 (SoCC'20)*.

Mar 2020 **Guest lecturer**, *CS 675 Distributed Systems*, Computer Science @ GMU.

Nov 2019 **Paper presentation**, *4th International Parallel Data Systems Workshop (PDSW'19)*.

Skills

Languages Python, C/C++, Java, SQL, C#.

Cloud AWS, GCP, Microsoft Azure, IBM Cloud.

Software VS Code, Visual Studio, IntelliJ, Eclipse, YourKit Profiler, RedGate Profilers, Linux, Windows.

Relevant Courses

C Programming, Linear Algebra, Data Structures, Operating Systems, Database Systems, Computer Architecture, Algorithms, Systems Programming, Compilers, Object Oriented Software Design, Machine Learning, Artificial Intelligence, Advanced Artificial Intelligence, Graph Algorithms, Deep Learning, Data Analytics, Mobile Development, Large-Scale Optimization for Deep Learning, Distributed Systems, Concurrent and Distributed Systems.

References

Dr. Yue Cheng,
Assistant Professor,
Computer Science and Data Science, University of Virginia,
mrz7dp@virginia.edu.

Dr. Songqing Chen,
Professor,
Computer Science, George Mason University,
sqchen@gmu.edu.

Dr. Rodrigo Fonseca,
Principal Researcher,
Azure Systems Research, Microsoft,
rofons@microsoft.com.