

Riza O. Suminto

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Summary

I am a Staff Software Engineer and Apache Impala Project Management Committee (PMC) member with 6+ years of experience architecting and scaling Massively Parallel Processing (MPP) systems and Big Data platforms. In my current role, I am responsible in research, development, and releases of Apache Impala as part of Cloudera Data Warehouse.

Education

- 2013 - 2019 **University of Chicago**, Chicago, IL, USA
Ph.D. in Computer Sciences
Thesis: Mitigating Cascading Performance Failures and Outages in Cloud Systems
Advisor: Prof. Haryadi S. Gunawi
- 2007 - 2011 **Universitas Gadjah Mada**, Yogyakarta, Indonesia
Bachelor in Computer Science, graduated with cum laude and 3.68 GPA

Work Experiences

- May 2022 - Present **Apache Impala PMC Member and Committer**, The Apache Software Foundation
Project Management Committee of [Apache Impala](#).
- Jan 2020 - Present **Staff Software Engineer**, Cloudera, Santa Clara, CA, USA
Working on research and development of [Apache Impala](#), the open source massively parallel processing (MPP) SQL query engine for open data and table formats.
- Architected and delivered [Utilization Aware Autoscaling](#), a distributed query plan strategy that scales with the workload size. It enables real-time resource elasticity to maintain low query latency and optimal compute cost. Delivered as [Workload Aware Auto-Scaling](#) in Cloudera Data Warehouse.
 - Speed up Iceberg query planning up to 12x faster by designing and implementing [Apache Iceberg Manifest Caching](#).
 - Improve accuracy of cardinality estimation and runtime filter sizing. This lead to increased query performance, lower memory usage, and higher query concurrency.
 - Contribute code to Apache Iceberg, Apache ORC, and Apache Thrift project.
 - Mentor intern and junior team members in Impala team.
- Jan 2014 - Dec 2019 **Research Assistant**, University of Chicago, Chicago, IL, USA
Working on “*improving performance reliability of distributed systems and cloud systems*” topic with [Prof. Haryadi S. Gunawi](#) in [UCARE](#) Group.
- May 2018 - Aug 2018 **Performance Engineer Intern**, Cloudera, Palo Alto, CA, USA
Working on “*automatic microbenchmark of public cloud storage*”, such as Amazon Simple Storage Service (S3) and Azure Data Lake Storage (ADLS).
- May 2016 - Aug 2016 **Research Intern**, Samsung Research America, Mountain View, CA, USA
Worked on “*robust distributed IOT system*” project, with [Masoud Saeida Ardekani](#), and [Rayman Preet Singh](#).

Sept 2013 - **Teaching Assistant**, University of Chicago, Chicago, IL, USA
Dec 2013 TA in Operating Systems course.

Technical Skills

Distributed Systems	Apache Impala, Apache Hive, Apache Hadoop.
Programming	Java, Python, C++, SQL.
Databases & Storage	PostgreSQL, MySQL, HDFS, S3, Apache Kudu, Apache Iceberg.
Others	Linux, Git, SVN, Docker, Jenkins.

Selected Publications

Jeffrey F. Lukman, Huan Ke, Cesar A. Stuardo, [Riza O. Suminto](#), Daniar H. Kurniawan, Dikaimin Simon, Satria Priambada, Chen Tian, Feng Ye, Tanakorn Leesatapornwongsa, Aarti Gupta, Shan Lu, Haryadi S. Gunawi. **FlyMC: Highly Scalable Testing for Complex Interleavings in Distributed Systems**. In *Proceedings of the 14th EuroSys Conference (EuroSys)*, March 2019.

Cesar A. Stuardo, Tanakorn Leesatapornwongsa, [Riza O. Suminto](#), Huan Ke, Jeffrey F. Lukman, Wei-Chiu Chuang, Shan Lu, Haryadi S. Gunawi. **ScaleCheck: A Single-Machine Approach for Discovering Scalability Bugs in Large Distributed Systems**. In *Proceedings of the 17th USENIX Conference on File and Storage Technologies (FAST)*, February 2019.

Haryadi S. Gunawi, [Riza O. Suminto](#), Russell Sears, Casey Golliher, Swaminathan Sundararaman, Xing Lin, Tim Emami, Weiguang Sheng, Nematollah Bidokhti, Caitie McCaffrey, Deepthi Srinivasan, Biswaranjan Panda, Gary Grider, Parks M. Fields, Kevin Harms, Robert B. Ross, Andree Jacobson, Robert Ricci, Kirk Webb, Peter Alvaro, H. Birali Runesha, Mingzhe Hao, Huaicheng Li **Fail-Slow at Scale: Evidence of Hardware Performance Faults in Large Production Systems**. In *ACM Transactions on Storage (TOS)*, Volume 14, Issue #3, November 2018.

Haryadi S. Gunawi, [Riza O. Suminto](#), Russell Sears, Casey Golliher, Swaminathan Sundararaman, Xing Lin, Tim Emami, Weiguang Sheng, Nematollah Bidokhti, Caitie McCaffrey, Gary Grider, Parks M. Fields, Kevin Harms, Robert B. Ross, Andree Jacobson, Robert Ricci, Kirk Webb, Peter Alvaro, H. Birali Runesha, Mingzhe Hao, Huaicheng Li. **Fail-Slow at Scale: Evidence of Hardware Performance Faults in Large Production Systems**. In *Proceedings of the 16th USENIX Conference on File and Storage Technologies (FAST)*, February 2018.

Masoud Saeida Ardekani, Rayman Preet Singh, Nitin Agrawal, Douglas B. Terry, [Riza O. Suminto](#). **Rivulet: Fault-Tolerant Platform for Smart-Home Applications**. In *Proceedings of the 18th International Middleware Conference (Middleware)*, December 2017.

Mingzhe Hao, Huaicheng Li, Michael Hao Tong, Chrisma Pakha, [Riza O. Suminto](#), Cesar A. Stuardo, Andrew A. Chien, Haryadi S. Gunawi. **MittOS: Operating System Supports for Millisecond Tail Tolerance in Data- Parallel Storage**. In *Proceedings of the 26th ACM Symposium on Operating Systems Principles (SOSP)*, October 2017.

[Riza O. Suminto](#), Cesar Stuardo, Alexandra Clark, Huan Ke, Tanakorn Leesatapornwongsa, Bo Fu, Daniar H. Kurniawan, Vincentius Martin, Uma Maheswara Rao G., and Haryadi S. Gunawi. **PBSE: A Robust Path-Based Speculative Execution for Degraded-Network Tail Tolerance in Data-Parallel Frameworks**. In *Proceedings of the 8th ACM Symposium on Cloud Computing (SoCC)*, September 2017.

Haryadi Gunawi, Huan Ke, Tanakorn Leesatapornwongsa, Jeffrey Lukman, Cesar Stuardo, and [Riza O. Suminto](#). **Scalability Bugs: When 100-Node Testing is Not Enough**. In *Proceedings of the 16th Workshop on Hot Topics in Operating Systems (HotOS)*, May 2017.

Haryadi S. Gunawi, Mingzhe Hao, [Riza O. Suminto](#), Agung Laksono, Anang D. Satria, Jeffry Adityatama, Kurnia J. Eliazar. **Why Does the Cloud Stop Computing? Lessons from Hundreds of Service Outages**. In *Proceedings of the 7th ACM Symposium on Cloud Computing (SoCC)*, October 2016.

Haryadi S. Gunawi., Thanh Do, Agung Laksono, Mingzhe Hao, Tanakorn Leesatapornwongsa, Jeffrey F. Lukman, and [Riza O. Suminto](#). **What Bugs Live in the Cloud?: A Study of Issues in Scalable Distributed Systems**. In *USENIX ;login: Magazine*, Vol. 40, No. 4., 2015

[Riza O. Suminto](#), Agung Laksono and Anang D. Satria, Thanh Do, Haryadi S. Gunawi. **Towards Pre- Deployment Detection of Performance Failures in Cloud Distributed Systems**. In *Proceedings of the 7th USENIX Conference on Hot Topics in Cloud Computing (HotCloud)*, July 2015.

Talks

Oct 2024	Intelligent Utilization Aware Autoscaling for Impala Virtual Compute Clusters. (Community Over Code NA 2024)
Sept 2017	PBSE: A Robust Path-Based Speculative Execution for Degraded-Network Tail Tolerance in Data-Parallel Frameworks. (SoCC '17)
Sept 2017	Scalability Bugs: When 100-Node Testing is Not Enough. (Chameleon User Meeting 2017)
Jul 2015	Towards Pre-Deployment Detection of Performance Failures in Cloud Distributed Systems. (HotCloud '15)

Posters

Riza O. Suminto, Cesar Stuardo, Alexandra Clark, Huan Ke, Bo Fu, Tanakorn Leesatapornwongsa, Vincentius Martin, Daniar Kurniawan, Haryadi S. Gunawi. **PBSE: Path-Based Speculative Execution for Robust Tail Tolerance in Data-Parallel Systems.** In *Poster Session of the 12th USENIX Symposium on Operating Systems Design and Implementation (OSDI)*, November 2016.

Tanakorn Leesatapornwongsa, Cesar Stuardo, Huan Ke, Jeffrey F. Lukman, Riza O. Suminto, Daniar H. Kurniawan, Haryadi S. Gunawi. **SCk: Scale-Checking and Debugging Scalability Bugs on One Machine.** In *Poster Session of the 12th USENIX Symposium on Operating Systems Design and Implementation (OSDI)*, November 2016.

Riza O. Suminto, Agung Laksono and Anang D. Satria, Thanh Do, Haryadi S. Gunawi. **Limplock Static Analysis: Preventing Slow Performance Lock-up in Cloud Systems.** In *Poster Session of the 11th USENIX Symposium on Operating System Design and Implementation (OSDI)*, October 2014.

Awards and Honors

2018	FAST '18 Student Grant , USENIX
2017	Middleware '17 Student Grant , ACM
2017	SOSP '17 Student Grant , USENIX
2017	SoCC '17 Student Scholarship , ACM
2015	ATC '15 Student Grant , USENIX
2015	UU Fellowship , University of Chicago
2014	OSDI '14 Grants for Women/Diversity Grant , USENIX
2011 & 2010	3rd place , Imagine Cup Indonesia
2007	Bronze Medalist , 19th International Olympiad in Informatics
2006	Gold Medalist , 5th National Science Olympiad in Informatics, Indonesia

Professional Service

2016	External reviewer	<i>TCC '16</i> , IEEE Transactions on Cloud Computing
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