

Thilina Buddhika

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Education

- **Ph.D, Computer Science** - GPA 4.0/4.0 (In Progress) **Jan., 2016 – Feb., 2020 (expected)**
Colorado State University Fort Collins, Colorado, USA
 - **M.S., in Computer Science** - GPA 4.0/4.0 **Aug., 2013 – Dec., 2015**
Colorado State University Fort Collins, Colorado, USA
 - **B.Sc. (Honors), Computer Science and Engineering** - GPA 4.02/4.2 **Feb., 2005 – Apr., 2009**
University of Moratuwa Moratuwa, Sri Lanka
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Research Interests

- Distributed Stream Processing, Large Scale Data Processing, Internet of Things, Edge Computing
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Professional Experience

- **Colorado State University** **Fort Collins, CO**
Graduate Research Assistant Jun., 2015 - Present
 - *Gossamer*: Leveraging frequency based sketching algorithms, e.g.: Count-Min, Misra-Gries algorithm, for efficient transfer, scalable storage, and fast querying of multi-attribute time series data streams in IoT and continuous sensing environments. Our approach demonstrated significant reductions in bandwidth consumption and energy consumption at edge devices (up to 99% and 96% respectively) using real world datasets. Further, it reduced the disk I/O up to 99% and network I/O up to 86% during data analysis tasks performed using Spark and Hadoop.
 - *Synopsis*: - Distributed in-memory sketching of spatio-temporal data streams for efficient querying and reconstruction of representative datasets. Synopsis was able to achieve up to 1 : 1285 compaction ratio through its sketching algorithm while providing ~ 10× query speedup compared to SparkSQL. 📄
 - *Neptune*: - High-throughput stream processing for IoT and continuous sensing environments. With the in-built optimizations such as application level buffering, batched processing, backpressure, object reuse, and dynamic compression Neptune was able achieve up to ~ 14× improvement in throughput compared to Apache Storm. Neptune's proactive online scheduling algorithm is able to efficiently alleviate performance hotspots through targeted task migrations within the cluster. 📄 📄
 - **Colorado State University** **Fort Collins, CO**
Graduate Teaching Assistant Sep., 2013 - May, 2015
 - *Courses*: Introduction to Distributed Systems, Database Systems, Systems and Network Administration, Object Oriented Problem Solving
 - **WSO2 Inc.** (An open source enterprise integration company - <https://wso2.com>) **Colombo, Sri Lanka**
Software Engineer Apr., 2009 - Jul., 2012
 - Lead the WSO2 Identity Server team for one and half years delivering two major product releases and several minor releases.
 - Designed and implemented SAML 2.0 based single sign-on support and OAuth 2.0 support in WSO2 Identity Server.
 - Implemented single sign-on support in WSO2 Stratos (Now Apache Stratos) - an open source complete Platform-as-a-Service offering.
 - Implemented OAuth based authentication support in WSO2 API Manager.
 - **WSO2 Inc.** **Colombo, Sri Lanka**
Intern - Software Engineering Oct., 2007 - Apr., 2008
 - Implemented a JRuby binding for Apache Axis2.
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Awards and Merits

- Invited participant for the 1st Google Research Summit 2017
 - Anita Read Graduate Teaching Award *for dedication to education and excellence in teaching* 2015-2016
 - Outstanding Contributor Award, WSO2 Inc. 2011 & 2012
 - Dean's List Recipient *for academic excellence*, University of Moratuwa 2005 - 2009
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Select Publications

- **Thilina Buddhika**, Ryan Stern, Kira Lindburg, Kathleen Ericson, and Shrideep Pallickara. Online Scheduling and Interference Alleviation for Low-latency, High-throughput Processing of Data Streams. *IEEE Transactions on Parallel and Distributed Systems*. Vol. 28(12) pp 3553-3569. 2017. [📄](#)
 - **Thilina Buddhika**, Matthew Malensek, Sangmi Lee Pallickara, and Shrideep Pallickara. Synopsis: A Distributed Sketch over Voluminous Spatiotemporal Observational Streams. *IEEE Transactions on Knowledge and Data Engineering*. Vol. 29(11) pp 2552-2566. 2017. [📄](#)
 - **Thilina Buddhika** and Shrideep Pallickara. Neptune: Real Time Stream Processing for Internet of Things and Sensing Environments. *Proceedings of the 30th IEEE International Parallel & Distributed Processing Symposium*. pp 1143-1152. Chicago, USA. 2016. [📄](#)
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Open Source Contributions

- **Apache Axis Project**
Member of Product Management Committee and Committer Jan., 2011 - present
 - Authored SAML 2.0 support for WS-Trust implementation in Apache Rampart. [🔗](#)
 - Performance, documentation and test coverage improvements for Apache Rampart. [🔗](#)
 - **Apache Flume Project**
Contributor Sep., 2014
 - Implemented a Flume sink for Apache Kafka (available with Apache Flume v1.6 release). [🔗](#)
 - **Google Summer of Code**
Apache Rampart Project Summer, 2009
 - Improving the test coverage in Apache Rampart.
 - **Google Summer of Code**
Apache Tuscany Project Summer, 2008
 - Implemented Tuscany SCA support in Apache Geronimo application server .
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Professional Service

- **Journal Reviewer**
ACM Computing Surveys 2018
 - **Google Summer of Code**
Mentor representing Apache Software Foundation 2010
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Technical Skills

- Programming Languages: *Java, Python*
- Standards and Specifications: *SOAP, WS-*, XML Security*
- Operating Systems: *Linux, Windows, MacOS*
- Development Tools: *Git, Subversion, Ant, Maven, Gradle, IntelliJ IDEA*
- Open Source Frameworks: *Apache Hadoop, Apache Spark, Apache Storm, Apache Kafka, Apache Zookeeper*