

# Thilina Buddhika

@ thilinab@cs.colostate.edu 🏠 www.thilinamb.com ☎ (970) 372-9159

🌐 www.linkedin.com/in/thilinamb 📄 github.com/thilinamb

---

## 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*
- 

## Research Interests

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

## 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.
-

## Awards and Merits

- Invited participant for the 1<sup>st</sup> 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
- 

## 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. (Impact Factor: 4.181) [📄](#)
  - **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. (Impact Factor: 3.438) [📄](#)
  - **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. (23% acceptance rate) [📄](#)
- 

## 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 .
- 

## Professional Service

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

## 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*