BUDDHIKA CHAMITH

PERSONAL INFORMATION

email	chamibuddhika@gmail.com
website	http://homes.soic.indiana.edu/budkahaw/
phone	+1 (317) 909 1713

INTERESTS

I am interested in techniques for monitoring and improving application performance. My specialties are runtime binary instrumentation techniques and performance optimizing runtime adaptive applications. My previous work also included work on large scale data processing.

EDUCATION

2013-Current Indiana University, Bloomington

PhD Computer Science

Minor: Programming Languages
Research: Work on lightweight runtime binary instrumentation techniques.

2013-2016 Indiana University, Bloomington

MS Computer Science

GPA: 3.85
Selected Course Work: Advanced Operating Systems, Advanced Database Systems, Programming Language Implementation, Programming Language Foundations, Theory of Computing, Machine Learning

2006-2010 University of Moratuwa, Sri Lanka

BSc. Computer Science

GPA: 3.91 (out of 4.2)
First Class Honors

WORK EXPERIENCE

2018 Summer Research Intern, Science Gateway Research Center

SGRC, Indiana University

- Developed Kisseru, a python library for scripting scientific dataflows. Features a lightweight embedded DSL which optimizes the data flow graph and run it locally or on Slurm.

WORK EXPERIENCE

2014–Present Research Assistant, Indiana University

Center for Research in Extreme Scale Technologies

- Developed Liteprof, a lightweight runtime binary instrumentation framework for x86. This work is published in PLDI'16 and PLDI'17.
- Contributed to Gibbon research compiler which operates on packed memory representations of ASTs to yield performance gains. This work will be published in ECOOP'17.
- Developed a nonblocking I/O library and related benchmarks on top of Concurrent Cilk workstealing parallel runtime research prototype. The related work was published in LCPC'15.

- Integrated HPX, a C based asynchronous many task runtime as a Haberno CnC backend target. This work entailed generating HPX C code from the CnC DSL specification using a Python template library.

2010–2013 Software Engineer, WSO2 Inc — Colombo

WSO2 Inc

- Software developer in Business Activity Monitoring team. Was involved in a complete rewrite of the product in order to make it scalable to handle high throughput data ingestion and big data analytics.
- Implemented a secondary indexing scheme on Apache Cassandra and a high throughput message ingestion service using Apache Thrift.
- Integrated Apache Hive to a cloud based multitenanted environment including source level changes within Hive to make it multitenant aware.

2008, 2009 Student Developer, Google Summer of Code

GSoC

- Apache Tomcat : Improved Tomcat JMX infrastructure making it possible to fully configure a Tomcat instance over JMX.
- Apache ODE : Integrated ODE based BPEL workflow support to BPELUnit. BPELUnit is an Eclipse based unit testing framework for BPEL processes.

PUBLICATIONS

PLDI'17
14.6%
Instruction Punning: Lightweight Instrumentation for x86-64, **Buddhika Chamith**, Bo Joel Svensson, Luke Dalessandro, Ryan Newton

ECOOP'17
Compiling tree transforms to operate on packed representations, Micheal Vollmer, Sarah Spall, **Buddhika Chamith**, Laith Sakka, Milind Kulkarni, Sam Tobin-Hochstadt, Ryan Newton

PLDI'16
16%
Living on the edge: Rapid-toggling probes with cross modification on x86, **Buddhika Chamith**, Bo Joel Svensson, Luke Dalessandro, Ryan Newton

LCPC'15
Concurrent Cilk: Lazy Promotion from Tasks to Threads in C/C++, Christopher Zakian, Timothy Zakian, Abhishek Kulkarni, **Buddhika Chamith**, Ryan Newton

TEACHING EXPERIENCE

2013 Fall Teaching Assistant for Introduction to Algorithms Graduate course.

2017 Fall Teaching Assistant for Programming Language Implementation Graduate course.

PROJECTS (REVERSE CHRONOLOGICAL)

Kisseru A Python library for scripting scientific dataflows. Github

Liteprof A lightweight binary instrumentation framework for x86-64.

Haberno CNC/HPX Integrated HPX distributed task execution enviornment as a CNC backend target. Poster

Concurrent Cilk A research prototype based on Intel Cilk with better support for blocking concurrency by promoting blocking lightweight threads to full OS threads.

WSO2 Data Analytics Server A data analytics and monitoring solution for enterprise middleware infrastructures. Contributed to the data analytics layer by integrating various big data solutions to the product.

DSync — A distributed synchronization library based on Apache Zookeeper. Blog

Apache Tomcat — Improving Tomcat JMX infrastructure. Blog

BPELUnit — BPELUnit is a unit testing framework for BPEL processes. Integrated Apache ODE as a runtime backend for the BPELUnit Eclipse plugin (tutorials at [1] & [2]).

PROFICIENCIES

Programming Languages — C, C++, Java, Python, x86 Assembly, Racket, Haskell

Technologies — SOAP web services, REST, OSGi, Experience with some of the Apache Big Data stack including Hadoop, Hive, Cassandra, Thrift, Zookeeper

Languages — English · Professional Proficiency

Sinhala · Native

September 13, 2018