Sumanaruban Rajadurai

PHD · RESEARCH FELLOW

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Aug. 2011 - Nov. 2016

Singapore

2004

Sri Lanka

Professional Objective _____

My purpose of career is to design and build high-tech advanced systems in computer science having strong implications for practice. Towards this goal, I have spent the whole of my PhD candidature in developing a distributed compiler and run-time system for high performance stream processing. I look forward in my career to develop such systems with practical significance.

Research Interests: Cyber Security, IoT, Large-scale Software Systems, Distributed Systems, High-performance Computing, and Distributed Stream Processing

Education

PhD in Computer Science

SCHOOL OF COMPUTING, NATIONAL UNIVERSITY OF SINGAPORE (NUS)

- Thesis Title Continuous Optimization of Distributed Stream Programs.
- My research interest lies in the area of programming languages and compilers. My dissertation aims at developing a distributed compiler and runtime system for high performance stream processing.
- I'm a fellow at the Singapore-MIT Alliance for Research and Technology (SMART). I am advised by Prof. Weng-Fai WONG from NUS, and Prof. Li-Shiuan PEI and Prof. Saman Amarasinghe from MIT.

Honors Degree of Bachelor of the Science of Engineering - BSc Eng. (Hons)	Feb. 2005 - Jun. 2009
FACULTY OF ENGINEERING, UNIVERSITY OF MORATUWA	Sri Lanka

• Specialized in Electronics and Telecommunication Engineering. First Class Honors.

GCE Advanced Level

NATIONWIDE

- District Rank 01. Country Rank 05.
- · Awarded DR.C.W.W.KANNANGARA Merit Award-2004 for nationwide academic excellence and achievement by Chadrika Bandaranayke Kumaratunga, the then president of Sri Lanka.

Publications

- Gloss: Seamless Live Reconfiguration and Reoptimization of Stream Programs. S. Rajadurai, J. Bosboom, W.F. Wong, and S. Amarasinghe. Accepted by The 28th ACM International Conference on Architectural Support for Programming Languages and Operating Systems (ASPLOS), Williamsburg, VA. U.S.A. Mar 2018. Acceptance rate: 17.2%
- StreamJIT: A commensal compiler for high-performance stream programming. J.Bosboom, S.Rajadurai, W.F.Wong and S.Amarasinghe. In ACM SIGPLAN Conference on Object-Oriented Programming Systems and Applications (**OOPSLA**), Portland, OR, October 2014.

Work Experience _____

Research Fellow

SYSTEM AND NETWORKING LAB 1, SCHOOL OF COMPUTING, NUS

· I work in high performance distributed stream processing.

Research Assistant

SYSTEM AND NETWORKING LAB 1, SCHOOL OF COMPUTING, NUS

Since Dec. 2016 Singapore

Aug. 2015 - Nov. 2016 Singapore

March 30, 2018

Visiting Research Scholar

CSAIL, MIT

• I worked with COMMIT group at MIT, lead by Prof. Saman Amarasinghe. Specifically, I developed distributed StreamJIT, a compiler and runtime system for high performance stream processing, during this period.

Software/Firmware Engineer

Excel Technology Lanka (Pvt) Ltd

• Excel Technology Lanka (Pvt) Ltd is a member company of GSI Group Inc (USA) groups of companies. Specifically, I designed and developed the laser marking (industrial automation) CAD software and hardware.

Engineering Intern

Dialog Broadband Networks (Pvt) Ltd

• During this period, I obtained training and practical experience with sufficient capacity in data communication, Metro Ethernet, networking, network planning, ISP, WiMax, hosted PBX-VOIP and microwave transmission.

Teaching Experience _____

Mentor Experience

Teaching Assistant	Aug. 2014 - Dec. 2014	
School of Computing, NUS	Singapore	
• My role was to tutor on Introduction to Operating Systems (CS2106) to an undergraduate class of 58 students.		
Visiting Instructor	Jun. 2008 - Apr. 2009	
Faculty of Engineering, University of Moratuwa	Sri Lanka	
Lworked as a visiting instructor for two subjects: Engineering Design (EN10E) and Engineering Skill Development (EN10C)		

• I worked as a visiting instructor for two subjects: Engineering Design (EN195) and Engineering Skill Development (EN196).

Implementing Dynamic Data Rate in StreamJIT	<i>Aug 2016 - Dec. 2017</i>
Final Year Project, School of Computing, National University of Singapore	Singapore
Implementation of LTE-A Uplink System and Advanced Receiver in StreamJIT	May 2014 - Apr. 2015
Final Year Project, Faculty of Engineering, University of Moratuwa	Sri Lanka
Software Defined Radio Implementation of DVB-T2 Receiver using StreamJIT	Jun. 2015 - Apr. 2016
Final Year Project, Faculty of Engineering, University of Moratuwa	Sri Lanka

Honors & Awards _____

2011	SMART Graduate Fellowship. A fully funded fellowship awarded by Singapore-MIT Alliance	Singanoro	
	(SMART) to pursue NUS-MIT collaborative PhD.	Singapore	
2006	Mahapola Scholarship. Awarded by Mahinda Rajapaksa, the then president of Sri Lanka.	Sri Lanka	
2005	Dialog Merit Scholarship. Awarded by Dialog Axiata PLC.	Sri Lanka	
2004	DR.C.W.W.KANNANGARA Merit Award. Awarded by Chadrika Bandaranayke Kumaratunga, the	Sri Lanka	
2004 th	then president of Sri Lanka, for my nationwide academic excellence and achievement in GCE(A/L).	STI LUTIKU	
2005-2009	Dean's List . Received Dean's List for all semesters during my undergraduate studies.	Sri Lanka	

PROJECTS _____

2

Apr. 2009 - Jul. 2011

Nov. 2007 - Apr. 2008

Feb. 2013 - Dec. 2013

Sri Lanka

Sri Lanka

USA

MARCH 30, 2018

· Designed and developed a hardware interface module that receives commands from front-end software and controls laser engraving

IEEE-1451 Compliant Smart Sensor System for Building Management

• Developed Network Capable Application Processor (NCAP) – software NCAP.

continuous optimization, and seamless (downtime free) reconfiguration.

trol of the laser marking head and any integrated external equipments.

- Developed Smart Transducer Interface Module (STIM) Hardware Module.
- Developed Application Interface in java software module.

Automated Customer Connection System via SMS for WiMax

• Receives a static WiMax antenna's GPS coordinates via SMS and automatically configures the antenna and enables it.

• I have architected and developed a new compiler and runtime system, StreamJIT, for high-performance stream processing. · Prominent features of Stream JIT are cluster-wide JIT compilation, automatic distribution, dynamic recompilation, online autotuning,

• Q-Mark Design Commander is an industrial automation CAD software for laser marking and engraving, which provides complete con-

Navigation Robot

• Developed a four wheel navigation robot for Robot Design Competition-2007 held in University of Moratuwa. This robot detects arrows and navigates.

Extracurricular Activity ____

President (2007) & Member

ALL UNIVERSITY STUDENT DEVELOPMENT ASSOCIATION VAVUNIYA (AUSDAV)

- AUSDAV is a charity organization with the vision of improving education in Vavuniya district, Sri Lanka.
- Arranged series of seminars for O/L students in rural area schools in Vavuniya district collaborate with the Department of Education, Vavuniya, Sri Lanka.
- Organized district level practice examinations for Grade 5 and GCE(A/L) students in collaborate with the Department of Education, Vavuniya, Sri Lanka.
- Arranged a book publication ceremony.
- · Gave financial scholarship to poor university students in Sri Lanka.

Member

THE INSTITUTION OF ENGINEERS, SRI LANKA (IESL)

• IESL is the apex body for professional engineers in Sri Lanka (founded in 1906).

Member

NUS TOASTMASTERS CLUB, SINGAPORE (NUSTM)

PHD RESEARCH PROJECT

Q-Mark Design Commander

Ultra Fast Controller-200

head accordingly.

• Frontend is in C# and Backend is in C/C++.

NUS-MIT

Excel Technology

Excel Technology

Final year group project

Dialog Broadband

University of Moratuwa

Aug. 2004 - Apr. 2009 Sri Lanka

Sri Lanka

Since Jan. 2009

Since Aug. 2016 Singapore