

Kirshanthan Sundararajah

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EDUCATION

Ph.D., Purdue University, West Lafayette, IN.
Major: Electrical and Computer Engineering

Aug 2015 - May 2022

B.Sc.Eng.(Hons), University of Moratuwa, Katubedda, Sri Lanka.
Major: Electronics and Telecommunication Engineering

Jul 2009 - Mar 2014

PROFESSIONAL EXPERIENCE

- **Graduate Research Assistant @Purdue University** Aug 2015 - Present
PLCL Group
 - **PolyRec**: Framework for composing and verifying transformations for nested recursion and loops.
 - **DARM**: Framework for melding similar control-flow graphs.
 - **Grafter**: Framework for fusing general recursive traversals over heterogeneous trees.
 - **Treelogy**: Benchmark suite for tree traversals.
 - **HACCLE**: An ecosystem for *Secure Multi-Party Computations*.
- **Software Engineering Intern @Nvidia** Sep 2020 - Dec 2020
GPU Compiler Group
 - **Diesel Compiler**: Warp specialization and pipelining for GPU kernels.
- **Software Engineering Intern @Reservoir Labs** June 2020 - Aug 2020
R-Stream Compiler Group
 - **ParSEC Backend**: A task-based runtime backend for *R-Stream* polyhedral compiler.
- **Research Intern @Microsoft Research** June 2018 - Sep 2018
RiSE Group
 - **Parallelizing Word2Vec**: Parallelizing and scaling *Word2Vec* training to execute on many cores.
- **Associate Electronic Engineer @Zone24x7 Inc.** May 2012 - Oct 2012
Signs24x7 Group
 - **Image Compression Algorithm**: Implementation of memory efficient image compression algorithm, supposed to perform decompression on an *STM32 microcontroller* based system.
 - **Clock Synchronization Algorithm**: Implementation of real-time clock synchronization algorithm, deployed on an *ARM microprocessor* runs *embedded Linux*.
 - **Hardware Abstraction Layer**: Implementation of *Hardware Abstraction Layer (HAL)* for radio communication protocol stack of *Electronic Paper Display (EPD)*, driven by an *STM32 microcontroller*.

PUBLICATIONS

- **K Sundararajah** and M Kulkarni "Composable, Sound Transformations of Nested Recursion and Loops" in *Programming Languages, Design and Implementation*, PLDI 2019. [ACM DL]
- L Sakka, **K Sundararajah**, R R Newton and M Kulkarni "Sound, Fine-Grained Traversal Fusion for Heterogeneous Trees" in *Programming Languages, Design and Implementation*, PLDI 2019. [ACM DL]
- L Sakka, **K Sundararajah** and M Kulkarni "TreeFuser: A Framework for Analyzing and Fusing General Recursive Tree Traversals" in *Object-Oriented Programming, Systems, Languages, and Applications*, OOPSLA 2017. [ACM DL]
- N Hegde, J Liu, **K Sundararajah** and M Kulkarni "Treelogy: A Benchmark Suite for Tree Traversals" in *IEEE International Symposium on Performance Analysis of Systems and Software*, ISPASS 2017. [IEEE Xplore]
- **K Sundararajah**, L Sakka and M Kulkarni "Locality Transformations for Nested Recursive Iteration Spaces" in *Architectural Support for Programming Languages and Operating Systems*, ASPLOS 2017. [ACM DL]
- **K Sundararajah** and S Jayasena, "Model-based Input-adaptive Vectorization" in *Moratuwa Engineering Research Conference*, MERCon 2016. [IEEE Xplore]
- **S Kirshanthan**, L Lajanugen, PND Panagoda, LP Wijesinghe, DVSX De Silva and AA Pasqual, "Layered Depth Image Based HEVC Multi-view Codec" in *Advances in Visual Computing: Proceedings of the International Symposium on Visual Computing*, ISVC 2014. [Springer]

ACHIEVEMENTS

- **Awards**
 - *Bilsland Dissertation Fellowship* 2021-2022, Purdue University.
 - *Electrical and Computer Engineering Fellowship* 2015-2016, Purdue University.
 - *V. K. Samaranayake Research Assistantship* 2014-2015, University of Moratuwa.
 - *Mahapola Merit Scholarship* 2009-2014, University of Moratuwa.
- **Grants**
 - ACM Travel Grant to Attend *PLDI* 2019.
 - ACM Travel Grant to Attend *SPLASH* 2018.
 - ACM Travel Grant to Attend *ASPLOS* 2017.
 - ACM Travel Grant to Attend *PLDI* 2016.
 - ACM Travel Grant to Attend *CGO* 2015.
- **Competitions**
 - *Silver Medal* in ACM Student Research Competition at *SPLASH* 2018.
 - Placed 25th, 34th, 29th and 45th correspondingly in *IEEEExtreme* 7.0, 6.0, 5.0 and 4.0.
 - Placed 4th in *Sri Lanka Robot Competition (SLRC)* 2012.
 - Champions of *Inter-University Statistics Quiz Competition* 2010, University of Colombo, Sri Lanka.
 - Participated at *International Mathematics Olympiad Competition(IMO)* 2009, Bremen, Germany

TEACHING EXPERIENCE

- ECE 368 Data Structures @*Purdue University* Summer 2021
- ECE 295 Introduction to Data Science @*Purdue University* Fall 2020
- ECE 295 Introduction to Data Science @*Purdue University* Summer 2019
- CS 1032 Programming Fundamentals @*University of Moratuwa* Mar 2014 - Jun 2015

SERVICE

- Organizer of PurPL weekly seminar.
- Member of Artifact Evaluation Committee for PLDI 2020.
- Program Committee Member of ECOOP 2019 Doctoral Symposium.
- Collaborative reviewer for POPL 2019.
- Volunteered to organize PLDI 2019, SPLASH 2018 and PLDI 2016.