## Siddhartha


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**Research Interests** Embedded Systems Design, FPGA/GPU Computing, Hardware Design, Graph Problems, Numerical Computing, Machine Learning

**Education**

**Nanyang Technological University**, Singapore

Ph.D., Embedded Systems Design, *Expected:* Winter 2016

- Current Project Area: *Dataflow Computing Model for Heterogeneous Embedded Coprocessors*
- Advisors: Nachiket Kapre, Assistant Professor

**Imperial College London**, London, United Kingdom

B.Eng., Electrical & Electronics Engineering, Jun 2012

**Research Experience**

**Research Student** Jan 2013 to present
Centre of High Performance Embedded Systems (CHiPES),
Nanyang Technological University
Supervisor: Nachiket Kapre, Assistant Professor

**Research Assistant** June 2012 to Oct. 2012
Circuits & Systems Research Group, EEE,
Imperial College London
Supervisors: Nachiket Kapre, Assistant Professor

**Awards** Richard Newton Young Fellow Award, Design Automation Conference Jun 2013

**Programming Skills**

Software:

- C, C++, R, Java, Bash, Python, LaTeX, Matlab, Pascal, PHP, Javascript, MySQL, and others

Hardware:

- VHDL, Verilog, SystemVerilog, Vivado HLS, CUDA, MaxIDE

**Service** Communication Coach, School of Humanities & Social Sciences Jan 2014 – Present

- Coaching graduate/undergraduate students on both written & verbal communication skills

**References**

Nachiket Kapre
Assistant Professor,
School of Computer Engineering,
Nanyang Technological University
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## Publications

October 2016
CaffePresso: An Optimized Library for Deep Learning on Embedded Accelerator-based platforms
Gopalakrishna Hegde, **Siddhartha**, Nachiappan Ramasamy, Nachiket Kapre
*International Conference on Compilers, Architecture, and Synthesis for Embedded Systems*
DOI: Upcoming

August 2016
Vector FPGA Acceleration of 1-D DWT Computations using Sparse Matrix Skeletons
Sidharth Maheshwari, Gourav Modi, **Siddhartha**, Nachiket Kapre
*26th IEEE International Conference on Field-Programmable Logic and Applications*
DOI: Upcoming

May 2016
Communication Optimization for the 16-core Epiphany Floating-Point Processor Array
**Siddhartha**, Nachiket Kapre
*24th IEEE International Symposium on Field-Programmable Custom Computing Machines*
DOI: 10.1109/FCCM.2016.15

May 2016
Evaluating Embedded FPGA Accelerators for Deep Learning Applications
Gopalakrishna Hegde, **Siddhartha**, Nachiappan Ramasamy, Vamsi Buddha, Nachiket Kapre
*24th IEEE International Symposium on Field-Programmable Custom Computing Machines*
DOI: 10.1109/FCCM.2016.14

May 2015
GraphMMU: Memory Management Unit for Sparse Graph Accelerators
Nachiket Kapre, Han Jianglei, Andrew Bean, Pradeep Moorthy, and **Siddhartha**
*22nd Reconfigurable Architectures Workshop 2015 (co-located with IPDPS 2015)*
DOI: 10.1109/IPDPSW.2015.101

Mar 2015
A Case for Embedded FPGA-based SoCs for Energy-Efficient Acceleration of Graph Problems
Pradeep Moorthy, **Siddhartha**, and Nachiket Kapre
*Supercomputing Frontiers 2015*
DOI: 10.14529/jsfi150307

Feb 2015
FPGA Acceleration of Irregular Iterative Computations using Criticality-Aware Dataflow Optimizations
**Siddhartha**, and Nachiket Kapre
*International Symposium on Field-Programmable Gate Arrays*
DOI: 10.1145/2684746.2689110

Dec 2014 — Fanout Decomposition Dataflow Optimizations for FPGA-based Sparse LU Factorization
**Siddhartha**, and Nachiket Kapre
*International Conference on Field-Programmable Technology*
DOI: 10.1109/FPT.2014.7082787

Sep 2014 — Heterogeneous Dataflow Architectures for FPGA-based Sparse LU Factorization
**Siddhartha**, and Nachiket Kapre
*The International Conference on Field Programmable Logic and Applications*
DOI: 10.1109/FPL.2014.6927401

Aug 2014 — Limits of Statically-Scheduled Token Dataflow Processing
Nachiket Kapre, and **Siddhartha**
*The International workshop on "Data-Flow Models (DFM) for extreme scale computing"*
DOI: 10.1109/DFM.2014.21

May 2014 — Breaking Sequential Dependencies in FPGA-based Sparse LU Factorization
**Siddhartha**, and Nachiket Kapre
*International Symposium on Field Programmable Custom Computing Machines*
DOI: 10.1109/FCCM.2014.26