# Thejas CR

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## Publications

**2013**  **Automatic data allocation and buffer management for multi-GPU machines**.

*Thejas Ramashekar, Uday Bondhugula (Indian Institute of Science, Bangalore)*

Submitted to ACM Transactions on Architecture and Code Optimization (TACO)

This paper proposes a novel memory manager called Bounding Box based Memory Manager(BBMM) for multi-GPU machines. BBMM can perform at *runtime*, standard set operations like union, intersection, difference, finding subset and superset relation on hyper-rectangular regions of array data (bounding boxes). It uses these operations along with some compiler assistance, to identify, allocate, and manage data required by applications (suitably tiled and parallelized for GPUs) in terms of *disjoint* bounding boxes. This allows it to (1) allocate only as much data (or close to) as is required by computations running on each GPU, (2) efficiently track buffer allocations and hence, maximize data reuse across tiles and minimize the data transfer overhead, (3) and as a result, enable applications to maximize the utilization of the combined memory on multi-GPU machines.

**2013**  **Generating Efficient Data Movement Code for Heterogeneous Architectures with Distributed-Memory**.

*Roshan Dathathri, Chandan Reddy, Thejas Ramashekar, Uday Bondhugula (Indian Institute of Science, Bangalore)*

ACM PACT, Sep 2013, To Appear, Edinburgh, Scotland.

This paper proposes efficient techniques for data movement between multiple compute devices that do not share address space. This work identifies the data to be sent from a source tile to a receiver tile at a precise granularity thereby minimizing the overhead of inter-device data movement. The techniques are based on advanced polyhedral techniques and has been demonstrated to work well on both distributed clusters and heterogeneous setups.

## Education

**2011–2013 (pursuing)**  **MSc (Engg.) in Computer Science and Automation**, *Indian Institute of Science*, Bangalore.
*Advisor: Dr. Uday Bondhugula*

7.33/8.0

**2001–2005**  **BE in Computer Science and Engineering**, *SJCE*, Mysore.

82.3%

**2001**  **PUC**, *Karnataka PU Board*, Sadvidya PU College, Mysore .

90.2%

**1999**  **SSLC**, *Karnataka State Board*, Sadvidya High School, Mysore .

92.4%

## Relevant Coursework

**Under-graduate**  Programming in C and C++, Data-structures, Algorithms, Computer Network Fundamentals, Databases, Operating Systems, Compilers

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|---|---|
| Graduate | Algorithms, Computer architecture, Advanced techniques in compilers and automatic parallelization |

## Programming skills

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| Expert | C, C++ |
| Intermediate | Java, Python |
| Tools | LaTeX, Bash Scripting, Eclipse, Git, Vim, GDB, PLuTo, Vtune |

## Reference

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