Vishwesh Jatala

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Employment

Postdoctoral Fellow *May 2018 - Present*
Oden Institute for Computational Engineering and Sciences
The University of Texas at Austin
Supervisor: Prof. Keshav Pingali

Research Interests

Computer Architecture (GPU and CPU), Optimizing Compilers for GPU Performance and Energy, High Performance Computing, Source to Source Translators, Parallelization, and GPU Graph Analytics.

Education

Doctor of Philosophy *July 2011 - Dec 2018*
Department of Computer Science & Engineering
Indian Institute of Technology, Kanpur
CPI: 9.0/10
Thesis Advisor: Prof. Amey Karkare

Bachelor of Technology *July 2005 - May 2009*
Department of Computer Science & Engineering
Visvesvaraya National Institute of Technology, Nagpur
CPI: 9.23/10 (**Institute Medal**)

Publications

- **Vishwesh Jatala**, Roshan Dathathri, Gurbinder Gill, Loc Hoang, V Krishna Nandivada, Keshav Pingali, A Study of Graph Analytics for Massive Datasets on Large-Scale Distributed GPUs, in 34th IEEE International Parallel & Distributed Processing Symposium (**IPDPS**), 2020 (*To appear*).
- Roshan Dathathri, Gurbinder Gill, Loc Hoang, Hoang-Vu Dang, **Vishwesh Jatala**, V Krishna Nandivada, Marc Snir, Keshav Pingali, Gluon-Async: A Bulk-Asynchronous System for Distributed and Heterogeneous Graph Analytics, in ACM/IEEE International Conference on Parallel Architectures and Compilation Techniques (**PACT**), 2019 [**Nominated for Best Paper**].
- Loc Hoang*, **Vishwesh Jatala***, Xuhao Chen, Udit Agarwal, Roshan Dathathri, Gurbinder Gill, Keshav Pingali, DistTC: High Performance Distributed Triangle Counting, in IEEE High Performance extreme Computing Conference (**HPEC**), 2019. [* Both authors contributed equally] [**Student Innovation Award**].
- **Vishwesh Jatala**, Jayvant Anantpur, and Amey Karkare, Reducing GPU Register File Energy, in 24th International European Conference on Parallel and Distributed Computing (**Euro-Par**), 2018.
- **Vishwesh Jatala**, Jayvant Anantpur, and Amey Karkare, GREENER: A Tool for Improving Energy Efficiency of GPU Register File, in High Performance Computing, Data, and Analytics, Student Research Symposium (**HiPC, SRS**), Jaipur, India, 2017 [**Best Poster Award**].

- **Vishwesh Jatala**, Jayvant Anantpur, and Amey Karkare, Scratchpad Sharing in GPUs, in ACM Transactions on Architecture and Code Optimization (**TACO**), 2017.
- **Vishwesh Jatala**, Jayvant Anantpur, and Amey Karkare, Improving GPU Performance Through Resource Sharing, 25th Symposium on High-Performance Parallel and Distributed Computing (**HPDC**), Kyoto, Japan, 2016.
- **Vishwesh Jatala**, Jayvant Anantpur, and Amey Karkare, Resource Sharing for GPUs, Code Generation and Optimization (**CGO**, Poster Track), Barcelona, Spain, 2016.

Articles in Review/Submission

- **Vishwesh Jatala**, Loc Hoang, Roshan Dathathri, Gurbinder Gill, V Krishna Nandivada, Keshav Pingali, An Adaptive Load Balancer For Graph Analytical Applications on GPUs, Arxiv, 2019. (**Under Submission**)
- Hochan Lee, Loc Hoang, **Vishwesh Jatala**, Roshan Dathathri, Gurbinder Gill, Keshav Pingali, A Study of Matrix-based APIs for Graph Analytics (**Under Review in PLDI 2020**)

Academic Achievements

- Recipient of **Tata Consultancy Services (TCS) Ph.D. Fellowship** from Jan 2014 to June 2018.
- Recipient of **Best Poster Award** for the poster titled "GREENER: A Tool for Improving Energy Efficiency of GPU Register File" at High Performance Computing, Data, and Analytics, Student Research Symposium (HiPC, SRS), Jaipur, India, 2017
- Recipient of **Best Poster Award** for the poster titled "Resource Sharing for GPUs" at IBM Research Day, IIT Kanpur, April 2017
- Recipient of **Institute Medal** for academic excellence in B.Tech, CSE, at VNIT Nagpur in September 2009.
- Awarded **Academic Excellence Prize** for academic excellence in B.Tech, CSE at VNIT Nagpur in September 2009.
- Recipient of **Dr.V.M. Dokras Felicitation Committee Prize** for academic excellence in 3^{rd} year B.Tech, CSE at VNIT Nagpur in September 2008.
- Recipient of **Academic Excellence Prize** for academic excellence in 3^{rd} year B.Tech, CSE at VNIT Nagpur in September 2008.
- Recipient of **Dr.S.G.Ghangrekhar Prize** for excellence in Mathematics in B.Tech at VNIT Nagpur in September 2006

Past Work Experience

- **IBM India Research Laboratory** *May 2013 - July 2013*
  Research Intern *New Delhi*

  Project Title: Reliable Multicast using Software Defined Networking
  In this project, we provided reliability service for group communication. The project extends Avalanche multi-cast routing algorithm by supporting reliability using pragmatic general multicast (PGM) protocol.

- **IIT Kanpur** *Aug 2011 - July 2012*
  System Administrator *Kanpur*

  The project duties involve in resolving departmental network and computer laboratory issues.

- **Oracle India Pvt Ltd** *June 2009 - July 2011*
  Member of Technical Staff *Hyderabad*

  The aim of our project is to find the security vulnerabilities in a product and provide best possible solutions to make it secure.

Talks/Presentations

- *Scratchpad Sharing in GPUs*, at 12th Inter-Research-Institute Student Seminar in Computer Science (IRISS), Nagpur, Feb 2018.
- *Scratchpad Sharing in GPUs*, CSE Doctoral Symposium, NIIT University, Rajasthan, September 23rd-24th, 2017.
- Poster Presentation on *Resource Sharing for GPUs*, IBM Research Day, IIT Kanpur, April 2017. [**IBM Best Poster Award**]
- *Improving GPU Performance Through Resource Sharing*, 11th Inter-Research-Institute Student Seminar in Computer Science (**IRISS**), Kolkata, Jan 2017.
- Poster Presentation on *Resource Sharing for GPUs*, Technology Day, IIT Kanpur, May 016.

Technical Skills

Open Source Simulators/Tools	GPGPU-Sim, GPU Ocelot, Cetus, GPUWattch CACTI, McPAT, Soot, Lex, Yacc, PIN
Programming Languages	C, C++, Java, and Pascal
Assembly Level Languages	PTX and MIPS
Scripting Languages	Perl Script and Shell Script
Parallel Programming	CUDA, OpenMP, and MPI
Network Programming	RPC, RMI, and Sockets
Query Languages	SQL, LINQ, and SPARQL

Teaching Assistant

CS738: Advanced Compiler Optimizations
CS601: Mathematics for Computer Science
CS252: Computing Laboratory
NPTEL: Fundamentals of Database System
Workshop on C Programming & Data Structures
CS335: Compiler Design
CS220: Introduction to Computer Organization
CS639: Program Analysis, Verification and Testing
CS602: Design and Analysis of Algorithms

Professional Service

- Reviewer for IPDPS 2020 (Joint Reviewer), PACT 2019, HIPC SRS 2017, ICCI 2017, and TOPC 2016
- Member of PPoPP 2020 Artifact Evaluation Committee
- Evaluated master thesis of a student at NTNU: Norwegian University of Science and Technology university