

# Vishwesh Jatala

## Assistant Professor

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## Research Interests

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Graphics Processing Units (GPUs), Optimizing Compilers for GPU Performance and Energy, Computer Architecture, High-Performance Computing, Source to Source Translators, Parallelization, and GPU Graph Analytics.

## Education

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### 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**)

## Professional Experience

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- Assistant Professor, **IIT Bhilai** *Aug 2020 - Present*
- Postdoctoral Fellow, **University of Texas at Austin** *Jan 2019 - June 2020*
- Research Fellow, **University of Texas at Austin** *May 2018 - Dec 2018*
- Research Intern, **IBM India Research Laboratory** *May 2013 - July 2013*
- Member of Technical Staff, **Oracle India Pvt Ltd** *June 2009 - July 2011*

## Publications

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1. **A Study of APIs for Graph Analytics Workloads**, Hohan Lee, David Wongy, Loc Hoang, Roshan Dathathri, Gurbinder Gill, **Vishwesh Jatala**, David Kucky, and Keshav Pingali, in IEEE International Symposium on Workload Characterization & Distributed Processing Symposium (**IISWC**), 2020.
2. **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.
3. 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**].
4. 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**].

5. **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.
6. **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**].
7. **Vishwesh Jatala**, Jayvant Anantpur, and Amey Karkare, Scratchpad Sharing in GPUs, in ACM Transactions on Architecture and Code Optimization (**TACO**), 2017.
8. **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.
9. **Vishwesh Jatala**, Jayvant Anantpur, and Amey Karkare, Resource Sharing for GPUs, Code Generation and Optimization (**CGO**, Poster Track), Barcelona, Spain, 2016.

## Technical Reports

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- **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.

## Sponsored Research Projects

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- **Vishwesh Jatala**, A High-Performance and Memory Efficient Graph Analytical Framework for GPUs. Project Fund: ~30 Lacs. Funding Agency: DST/SERB. 2021-23.

## Teaching

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1. CS516: Parallelization of Programs *July 2021 - Dec 2021*
2. Online Student Training Programme (STP) on Compiler Design, Organized by IIT Bhilai and CSVTU *March 21 -25, 2021*
3. CS251: Introduction to Language Processing *Dec 2020 - March 2021*
4. CS300: Principles of Programming Languages [Jointly with Dr. Subhajit Sidhanta] *July 2020 - Nov 2020*

## Student Mentoring

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- **Ph.D:**
  - Niharika Nayak
- **M.Tech:**
  - Ranjith Vutnoor
  - Apurva Dorga

## Awards

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1. Recipient of **Student Innovation Award** in HPEC, 2019
2. **Nominated for Best Paper Award** in PACT, 2019
3. Recipient of **Tata Consultancy Services (TCS) Ph.D. Fellowship** from Jan 2014 to June 2018.
4. Recipient of **Best Poster Award** in HiPC, Student Research Symposium, 2017

5. Recipient of **Best Poster Award** in IBM Research Day, IIT Kanpur, 2017
6. Recipient of **Institute Medal** for academic excellence in B.Tech, CSE, VNIT Nagpur, 2009.
7. Awarded **Academic Excellence Prize** for academic excellence in B.Tech, CSE, VNIT Nagpur, 2009.
8. Recipient of **Dr.V.M. Dokras Felicitation Committee Prize** for academic excellence in 3<sup>rd</sup> year B.Tech, CSE, VNIT Nagpur, 2008.
9. Recipient of **Academic Excellence Prize** for academic excellence in 3<sup>rd</sup> year B.Tech, CSE, VNIT Nagpur, 2008.
10. Recipient of **Dr.S.G.Ghangrekhar Prize** for excellence in Mathematics in B.Tech, VNIT Nagpur, 2006

## Talks/Presentations

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- *Graph Processing on GPUs*, at HiPC Programming Contest (GPU Track), 2021
- *Introduction to GPUs, CUDA Programming, Optimizations, and Research Directions*, at Computer Architecture Winter School (CAWS), 2020
- *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.

## Professional Service

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- **2021:**
  - Organizing Committee, NSM-CAWS 2021
  - Publicity Chair, HiPC 2021
  - Organizing Committee, HiPC Programming Contest (GPU Track)
  - Organizing Committee, PPEE 2021
  - Reviewer, JPDC
  - Member of Master Thesis Evaluation Committee of a Student, NTNU
- **2020:**
  - Program Committee, PPOPP Artifact Evaluation
  - Organizing Committee, CAWS 2020
  - Reviewer, PACT and IPDPS (Joint reviewer)
  - Member of Master Thesis Evaluation Committee of a Student, NTNU
- **2019:**

- Reviewer, PACT
  - Member of Master Thesis Evaluation Committee of a Student, NTNU
- **2017:**
  - Reviewer, HiPC SRS and ICCI
- **2016:**
  - Reviewer, TOPC