

Vishwesh Jatala

Assistant Professor

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Research Interests

Graphics Processing Units (GPUs), High-Performance Computing, Graph Neural Networks, 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**)

Professional Experience

- 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

1. A Cluster-Based Sampling Scheme for High-Performance Graph Neural Networks, Surendra Kumar Raut, Kishan Tamboli, **Vishwesh Jatala**, IEEE International Symposium on Performance Analysis of Systems and Software (**ISPASS**), 2026
2. LSTC: Large-Scale Triangle Counting on Single GPU, Kishan Tamboli, **Vishwesh Jatala**, ACM/SPEC International Conference on Performance Engineering (**ICPE**), 2026
3. GPU-Accelerated Time Series Anomaly Detection using Matrix Profile, Raviteja Nandam, **Vishwesh Jatala**, International Conference on Data Science (**IKDD CODS**), 2025
4. Graph Coarsening for High-Performance GNN , Niharika Nayak, Kishan Tamboli, **Vishwesh Jatala** at Student Research Symposium, 32nd IEEE International Conference on High Performance Computing, Data, and Analytics (**HiPC**), 2025. [**Best SRS Poster Award**]
5. Edge Pruning Methods for Distributed GNN , Shrashank Maravi, Surendra Kumar Raut, Kishan Tamboli, **Vishwesh Jatala** at Student Research Symposium, 32nd IEEE International Conference on High Performance Computing, Data, and Analytics (**HiPC**), 2025.

6. CentGNN: A Centrality-Driven Scheme for High-Performance Graph Neural Networks , Surendra Kumar Raut, Kishan Tamboli, **Vishwesh Jatala** at Student Research Symposium, 32nd IEEE International Conference on High Performance Computing, Data, and Analytics (**HiPC**), 2025.
7. Multivariate Time Series Data Mining for Failure Prediction & Root Cause Analysis, Naman Agarwal, Gagan Raj Gupta, **Vishwesh Jatala**, Aniket Saha, IEEE International Conference on Acoustics, Speech, and Signal Processing (**ICASSP**), 2025
8. A Cluster-Based Sampler for Fast GNN , Surendra Kumar Raut, Kishan Tamboli, **Vishwesh Jatala** at Student Research Symposium, 31st IEEE International Conference on High Performance Computing, Data, and Analytics (**HiPC**), 2024.
9. Accelerated Multilevel Graph Partitioning on GPUs, Amitesh Singh, Bhakti Dhorajiya, **Vishwesh Jatala** at Student Research Symposium, 31st IEEE International Conference on High Performance Computing, Data, and Analytics (**HiPC**), 2024.
10. A Partitioning Scheme for Large Scale Clique Counting on Single GPU, Vinayak Kesarwani, Shivangi Gaur, Sudeep Ranjan Sahoo, Kishan Tamboli, **Vishwesh Jatala** at Student Research Symposium, 31st IEEE International Conference on High Performance Computing, Data, and Analytics (**HiPC**), 2024.
11. Distributed Graph Neural Networks, Dhruv Deshmukh, Gagan Gupta, and **Vishwesh Jatala**, Tutorial Track, Joint International Conference on Data Sciences and Management of Data (**CODS-COMAD**), 2024
12. Dhruv Deshmukh, Gagan Gupta, Manisha Chawla, **Vishwesh Jatala**, and Anirban Haldar, Entropy Aware Training for Fast and Accurate Distributed GNN, 23rd IEEE International Conference on Data Mining (**ICDM**), 2023
13. Memory Efficient Sparse Matrix-Matrix Multiplication on GPU, Apurva Dogra, Kishan Tamboli, and **Vishwesh Jatala** at Student Research Symposium, 30th IEEE International Conference on High Performance Computing, Data, and Analytics (**HiPC**), 2023.
14. Manohar Lal Das, **Vishwesh Jatala**, and Gagan Raj Gupta, Joint Partitioning and Sampling Algorithm for Scaling Graph Neural Networks, 29th IEEE International Conference on High Performance Computing, Data, and Analytics (**HiPC**), 2022.
15. David P. Bunde, Kishwar Ahmed, Sridevi Ayloo, Tisha Brown-Gaines, Joel Fuentes, **Vishwesh Jatala**, Ruth Kurniawati, İsl̄ Öz, Apan Qasem, Philip J. Schielke, Mary C. Tedeschi, Thomas Y. Yeh, Adopting Heterogeneous Computing Modules: Experiences from a ToUCH Summer Workshop,10th Workshop on Education for High-Performance Computing (**EduHPC-22**), 2022.
16. Niharika Nayak, **Vishwesh Jatala**, Accelerating Graph Neural Networks using GPU, at Student Research Symposium (**SRS**), 29th IEEE International Conference on High Performance Computing, Data, and Analytics (**HiPC**), 2022.
17. Hochan Lee, David Wongy, Loc Hoang, Roshan Dathathri, Gurbinder Gill, **Vishwesh Jatala**, David Kucky, and Keshav Pingali, A Study of APIs for Graph Analytics Workloads, in IEEE International Symposium on Workload Characterization & Distributed Processing Symposium (**IISWC**), 2020.
18. **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.
19. 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].

20. 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**].
21. **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.
22. **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**].
23. **Vishwesh Jatala**, Jayvant Anantpur, and Amey Karkare, Scratchpad Sharing in GPUs, in ACM Transactions on Architecture and Code Optimization (**TACO**), 2017.
24. **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.
25. **Vishwesh Jatala**, Jayvant Anantpur, and Amey Karkare, Resource Sharing for GPUs, Code Generation and Optimization (**CGO**, Poster Track), Barcelona, Spain, 2016.

Technical Reports

- **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

- **Vishwesh Jatala**, A High-Performance and Memory Efficient Graph Analytical Framework for GPUs. Project Fund: ~30 Lacs. Funding Agency: DST/SERB. 2021-23.
- **Vishwesh Jatala**, A High-Performance and Memory-Efficient Deep Learning Framework for GPUs. Project Fund: ~12 Lacs. Research Initiation Grant. IIT Bhiai. 2022-25.
- Gagan Raj Gupta, **Vishwesh Jatala (Co-PI)** Digital Transformation System For Pre-Failure Alert Generation For Equipment Faitlure & Cobble Reduction Based on Data Analytics And Video Analytics at BRM . Project Fund: 2.99 Crore, Bhilai Steel Plant, 2023-25.

Teaching

1. CS516: Parallelization Of Programs
2. CSL302: Compiler Design
3. CS519: High Performance Computer Architecture
4. CS251: Introduction to Language Processing
5. CS501: Computer Systems
6. CSP203: Software Tools & Technolgies Lab
7. CSL503: Computer Systems Engineering [Jointly with Prof. Santosh Biswas]
8. CS100: Software Tools & Technolgies Lab 1
9. CS300: Principles of Programming Languages [Jointly with Dr. Subhajit Sidhanta]

10. MAL505: Database Management Systems [Jointly with Dr. Souradyuti Paul]
11. DSP505: Programming Lab for Data Science and Artificial Intelligence
12. TPL616: Advanced Programming for DSAI [Jointly with Dr. Gagan Raj Gupta]
13. Online Student Training Programme (STP) On Compiler Design, Organized by CSVTU and IIT Bhilai (March 21-25 2021)
14. Mathematics for Data Science, AICTE-QIP-PG CERTIFICATE PGROGRAMME, IIT Bhilai, 2024

Student Mentoring

- **Ph.D:**

- Niharika Nayak
- Surendra Kumar Raut
- Kishan Tamboli
- Yash Raj Verma

- **M.Tech:**

- Gobardhan Meher
- Rupam Roy
- Aniket Mittal
- Shrashank Maravi
- Raviteja Nandam (Graduated in 2025)
- Amitesh Singh (Graduated in 2025)
- Ranjith Vutnoor (Graduated in 2023)
- Apurva Dorga (Graduated in 2023)

- **M.Sc:**

- Karan Dewangan [Jointly with Dr. Avijit Pal] (Graduated in 2025)
- Himanshu [Jointly with Dr. Kuldeep Kumar Kataria]

Awards

1. Recipient of **Best Poster (SRS) Award** at HiPC 2025
2. Recipient of Student Innovation Award in HPEC 2019
3. Recipient of **Student Innovation Award** in HPEC, 2019
4. **Nominated for Best Paper Award** in PACT, 2019
5. Recipient of **Tata Consultancy Services (TCS) Ph.D. Fellowship** from Jan 2014 to June 2018.
6. Recipient of **Best Poster Award** in HiPC, Student Research Symposium, 2017
7. Recipient of **Best Poster Award** in IBM Research Day, IIT Kanpur, 2017
8. Recipient of **Institute Medal** for academic excellence in B.Tech, CSE, VNIT Nagpur, 2009.

9. Awarded **Academic Excellence Prize** for academic excellence in B.Tech, CSE, VNIT Nagpur, 2009.
10. Recipient of **Dr.V.M. Dokras Felicitation Committee Prize** for academic excellence in 3rd year B.Tech, CSE, VNIT Nagpur, 2008.
11. Recipient of **Academic Excellence Prize** for academic excellence in 3rd year B.Tech, CSE, VNIT Nagpur, 2008.
12. Recipient of **Dr.S.G.Ghangrekhbar Prize** for excellence in Mathematics in B.Tech, VNIT Nagpur, 2006

Talks/Presentations

- Invited talk on **Pre-failure alert generation for equipment & cobble reduction based on data analytics and video analytics at BRM** as a Distinguished Speaker at the Workshop on Digital Initiatives for Increasing Transparency in Governance, 2026
- *HPC Technologies for AI/ML*, FDP on The Role of Data Science in Computational Mathematics & Statistics, 2025
- *HPC Technologies for AI/ML*, ATAL FDP, 2024
- *High Performance Distributed Graph Neural Networks*, NSM HPC Research Week, IIT Madras, November 2023
- *Graphics Processing Units, Guest Lecture*, G. H. Raisoni College of Engineering, 2022
- *Introduction to Parallel Architectures*, NSM-Computer Architecture Winter School (NSM-CAWS), 2021
- *GPU Architectures and CUDA Programming*, NSM-Computer Architecture Winter School (NSM-CAWS), 2021
- *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 2016.

Professional Service

- **2025:**
 - Program Committee, HiPC 2025
 - Program Committee, ICFEC 2025
 - SRS Co-Chair, HiPC 2025

- External examiner, PhD Thesis, IIIT Hyderabad
- External examiner, MS Thesis, IIT Madras

- **2024:**

- Program Committee, HiPC 2024
- Poster Co-Chair, HiPC 2024
- Reviewer, TACO, 2024
- External examiner, for PhD Thesis, IIT Madras
- External examiner, for PhD Proposal Defense, IIIT Hyderabad
- External examiner, M.S Thesis, IIT Palakkad

- **2023:**

- Program Committee, HiPC 2023
- Publicity Co-Chair, HiPC 2023

- **2022:**

- Program Committee, WDFHC 2022
- Publicity Co-Chair, HiPC 2022
- Reviewer, JPDC 2022

- **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