

Ahmedur Rahman Shovon

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Education

PhD (Candidate) in Computer Science University of Illinois Chicago Dissertation: Declarative Analytics on Heterogeneous Exascale Systems Advisor: Dr. Sidharth Kumar GPA: 4.00/4.00	08/2023 - current Chicago, IL
PhD (Student) in Computer Science University of Alabama at Birmingham Advisor: Dr. Sidharth Kumar GPA: 4.00/4.00	08/2021 - 08/2023 Birmingham, AL
Master of Science in Information Technology Jahangirnagar University Thesis: A RESTful E-Governance Application Framework for People Identity Verification in Cloud Advisor: Dr. Md Whaiduzzaman GPA: 3.67/4.00	01/2016 - 01/2017 Dhaka, Bangladesh
Bachelor of Science in Information Technology Jahangirnagar University Project: EasyC: A Platform for Learning C Programming GPA: 3.73/4.00	01/2012 - 01/2016 Dhaka, Bangladesh

Research Interest

High Performance Computing, Data Analytics, Cloud Computing, Software Engineering

Experience

Graduate Research and Teaching Assistant University of Illinois Chicago • Developing multi-node, multi-GPU applications focusing on high-performance relational algebra primitives. • Extending the topological data analysis pipeline to apply persistent homology on brain networks. • TA: CS 480 Database Systems, CS 455 Introduction to High Performance Computing.	08/2023 - cont. Chicago, IL
Graduate Student Intern (WJ Cody Associate) Argonne National Lab • Enhanced Rosetta-Bench, a benchmark suite for evaluating parallel programming model performance. • Integrated HIP benchmarks and refined benchmark report generation. • Collaborated with HPC engineers on integrating the benchmark suite in HPC systems.	05/2023 - 08/2023 Lemont, IL
Graduate Research Assistant (Blazer Fellow) University of Alabama at Birmingham • Demonstrated the feasibility of a high-performance relational algebra backend for a subset of Datalog applications leveraging GPU parallelism. • Developed a visualization tool to create Kaplan Meier survival probability graph for cancer data analysis. • Designed a topological data analysis pipeline to apply persistent homology on brain networks resting state fMRI data.	08/2021 - 08/2023 Birmingham, AL
Assistant Programmer ICT Division, Government of Bangladesh • Developed a web application visualizing e-File usage data across root-level government offices. • Led cross-functional teams in developing and delivering multiple e-Governance applications. • Integrated technology-driven solutions to advance Sustainable Development Goals (SDG).	06/2019 - 08/2021 Dhaka, Bangladesh

Software Engineer **12/2017 - 06/2019**
 Cefalo Bangladesh Ltd. Dhaka, Bangladesh

- Developed and maintained five publications of this Norwegian media conglomerate in a global team.
- Re-designed the digital subscription model that reduced the subscription completion time by 75%.
- Automated multi-tiered web application deployment process by designing a CI/CD pipeline.

Software Engineer **10/2016 - 11/2017**
 Codalo Dhaka, Bangladesh

- Developed a Education as a Service(EaaS) application.
- Created real time fingerprint based attendance system with instant messaging service.
- Designed a CI/CD pipeline for web application deployment.

Teaching Experience

Graduate Teaching Assistant **Spring 2025**
 Department of Computer Science, University of Illinois Chicago Chicago, IL
 Course: *Introduction to High-Performance Computing*

- Evaluated assignments, projects, and theoretical tasks related to parallel computing and HPC concepts.
- Created scripts using Github APIs for grading and organizing students assignment on Github classroom.
- Assisted students on their projects on ALCF and campus HPC resources.

Graduate Teaching Assistant **Fall 2024**
 Department of Computer Science, University of Illinois Chicago Chicago, IL
 Course: *Database Systems*

- Designed and evaluated SQL programming assignments, projects, and exams.
- Configured Gradescope's Autograder for autograding programming assignments.
- Delivered a guest lecture on optimizing database performance by caching queries using Redis.

Graduate Teaching Assistant **01/2016 - 12/2016**
 Institute of Information Technology, Jahangirnagar University Dhaka, Bangladesh
 Course: *Operating Systems*

- Conducted weekly lab sessions focused on shell scripting, process management, and system calls.
- Assisted students in implementing OS-related projects, debugging code, and understanding core concepts.
- Designed and graded bi-weekly tests on operating system topics.

Bibliometrics

Journal Articles: 3, Book Chapter: 1, Conference Papers: 8, Workshop Papers: 2
 Citations: 1709, h-index: 6 (retrieved from Google Scholar on 04/21/2025)

Journal Articles

[J3] Sidharth Kumar, **Ahmedur Rahman Shovon**, Gopikrishna Deshpande, **The robustness of persistent homology of brain networks to data acquisition-related non-neural variability in resting state fMRI**, In: *Human Brain Mapping*. DOI: 10.1002/hbm.26403. (Q1).

[J2] Darshan Shimoga Chandrashekar, Santhosh Kumar Karthikeyan, Praveen Kumar Korla, Henalben Patel, **Ahmedur Rahman Shovon**, Mohammad Athar, George J Netto, Zhaohui S Qin, Sidharth Kumar, Upender Manne, Chad J Crieghton, and Sooryanarayana Varambally, **UALCAN: An update to the integrated cancer data analysis platform**, In: *Neoplasia*. DOI: 10.1016/j.neo.2022.01.001. (Q1).

[J1] Md Whaiduzzaman, Md. Razon Hossain, **Ahmedur Rahman Shovon**, Shanto Roy, Aron Laszka, Rajkumar Buyya, and Alistair Barros, **A Privacy-preserving Mobile and Fog Computing Framework to Trace and Prevent COVID-19 Community Transmission**, In: *IEEE Journal of Biomedical and Health Informatics (J-BHI)*. DOI: 10.1109/JBHI.2020.3026060. (Q1).

Book Chapters

[B1] **Ahmedur Rahman Shovon**, Shanto Roy, Tanusree Sharma, and Md. Whaiduzzaman, **A RESTful E-Governance Application Framework for People Identity Verification in Cloud**, In: *Luo M., Zhang L.J. (eds) Cloud Computing – CLOUD 2018. Lecture Notes in Computer Science, vol 10967. Springer, Cham*. DOI: 10.1007/978-3-319-94295-7_19.

Conference Papers	<p>[C8] Ahmedur Rahman Shovon, Yihao Sun, Thomas Gilray, Kristopher Micinski, Sidharth Kumar, Multi-Node Multi-GPU Datalog, In: <i>ACM International Conference on Supercomputing 2025 (ICS 2025)</i>, (Accepted).</p>	
	<p>[C7] Yihao Sun, Ahmedur Rahman Shovon, Thomas Gilray, Kristopher Micinski, Sidharth Kumar, Optimizing Datalog for the GPU, In: <i>2025 the ACM International Conference on Architectural Support for Programming Languages and Operating Systems (ASPLOS 2025)</i>, DOI: 10.1145/3669940.3707274.</p>	
	<p>[C6] Andres Sewell, Ke Fan, Ahmedur Rahman Shovon, Landon Dyken, Sidharth Kumar, Steve Petruzza, Bruck Algorithm Performance Analysis for Multi-GPU All-to-All Communication, In: <i>Proceedings of the International Conference on High Performance Computing in Asia-Pacific Region (HPCAsia 2024)</i>, Nagoya, Japan, 2024 pp. 127–133. DOI: 10.1145/3635035.3635047.</p>	
	<p>[C5] Ahmedur Rahman Shovon, Thomas Gilray, Kristopher Micinski, Sidharth Kumar, Towards Iterative Relational Algebra on the GPU, In: <i>2023 USENIX Annual Technical Conference (USENIX ATC 23)</i>, Boston, MA, USA, 2023 pp. 1009-1016. ISBN: 978-1-939133-35-9.</p>	
	<p>[C4] Md Whaiduzzaman, Alistair Barros, Ahmedur Rahman Shovon, Md Razon Hossain, and Colin Fidge, A Resilient Fog-IoT Framework for Seamless Microservice Execution, In: <i>IEEE International Conference on Services Computing (SCC) - 2021</i>, pp. 213-221. DOI: 10.1109/SCC53864.2021.00034.</p>	
	<p>[C3] Md Shahriare Satu, Md Khalilur Rahman, Maksud Alam Rony, Ahmedur Rahman Shovon, Md Jane Alam Adnan, Koushik Chandra Howlader, and M Shamim Kaiser, COVID-19: Update, Forecast and Assistant-An Interactive Web Portal to Provide Real-Time Information and Forecast COVID-19 Cases in Bangladesh, In: <i>International Conference on Information and Communication Technology for Sustainable Development - 2021</i>, pp. 456-460. DOI: 10.1109/ICICT4SD50815.2021.9396786.</p>	
Workshop Papers	<p>[C2] Ahmedur Rahman Shovon, Shanto Roy, Arnab Kumar Shil, and Tanjila Atik, GDPR Compliance: Implementation Use Cases for User Data Privacy in News Media Industry, In: <i>International Conference on Advances in Science, Engineering and Robotics Technology (ICASERT) - 2019</i>, pp. 1-6. DOI: 10.1109/ICASERT.2019.8934660.</p>	
	<p>[C1] Shanto Roy, Ahmedur Rahman Shovon, and Md. Whaiduzzaman, Combined approach of Tokenization and Mining to secure and optimize Big Data in Cloud Storage, In: <i>IEEE R10 Humanitarian Technology Conference (R10-HTC) - 2017</i>, pp. 83-88. DOI: 10.1109/R10-HTC.2017.8288912.</p>	
	<p>[W2] Kashyap Balakavi, Rushitha Janga, Ahmedur Rahman Shovon, Don Dempsey, Elliot Lefkowitz, and Sidarth Kumar, Scalable, interactive and hierarchical visualization of virus taxonomic data, In: <i>2021 IEEE Workshop on Visual Analytics in Healthcare (VAHC)</i>, Melbourne, Australia, 2023, in conjunction with IEEE VIS 2023, DOI: 10.1109/VAHC60858.2023.00012.</p>	
Reviewer Recognition	<p>[W1] Ahmedur Rahman Shovon, Landon Richard Dyken, Oded Green, Thomas Gilray, and Sidharth Kumar, Accelerating Datalog applications with cuDF, In: <i>2022 IEEE/ACM Workshop on Irregular Applications: Architectures and Algorithms (IA3)</i>, Dallas, TX, USA, 2022 pp. 41-45 in conjunction with SC22. DOI: 10.1109/IA356718.2022.00012.</p>	
	<p>Journal: Sustainable Cities and Society (SCS) Impact Factor: 7.58, Publisher: <i>Elsevier</i>.</p>	
Awards	<p>USENIX ATC Student Grant Awarded by the USENIX Association.</p>	2023
	<p>Blazer Graduate Research Fellowship Awarded by the University of Alabama at Birmingham.</p>	2021-2022
	<p>National Science and Technology (NST) Fellowship Awarded by the Ministry of Science and Technology, Bangladesh.</p>	2016-2017

	University Merit Scholarships Awarded by the Jahangirnagar University.	2012-2016
Achievements	3rd @ Computational Research Symposium Poster Presentation 2025 Presented posted on our multi-node multi-GPU Datalog engine (MNMGDatalog).	04/2025
	Winner @ oneAPI Hackathon: CUDA to SYCL Migration Ported CUDA project to SYCL with automatic and manual interventions.	10/2023
	Participant @ Argonne GPU Hackathon 2022 Benchmarked transitive closure computation, nested loop join on ThetaGPU.	07/2022
	1st @ Hackerrank Python and Security domain Solved all Python and Security domain related challenges at Hackerrank.	07/2016
	7th @ IEEEExtreme Programming Competition 9.0 Achieved 7 th position out of 2,477 teams, Team: <i>JUITCoders</i> .	10/2015
Technical Skills	Languages: Python, C++, JavaScript, Java, SQL, Bash, PHP. Parallel programming models: CUDA, MPI, Thrust, SYCL, HIP, OpenMP, CuDF. Data analytics: Pandas, NumPy, Scikit-learn, Gudhi, Matplotlib, D3.js. Web tools: Flask, Django, React, jQuery, CodeIgniter, Redis, AWS. CI/CD: Docker, GitHub Actions, Travis CI, Jenkins, Boto3, Kubernetes.	
Training	Hands-on HPC Workshop @ ALCF Covers topics to porting applications to heterogeneous architectures.	10/2023
	AI for Science on Supercomputers @ ALCF Covers topics to develop AI solutions and scale AI training on ThetaGPU supercomputer. (<i>certificate link</i>)	12/2022
	Hands-On HPC @ OLCF Covers HPC tools (MPI, OpenMP, and CUDA) using Summit supercomputer. (<i>certificate link</i>)	12/2022
	Fundamentals of Accelerated Computing @ NVIDIA Covers topics of accelerating applications on GPUs utilizing CUDA programming model. (<i>certificate link</i>)	06/2022
	Effective Object Oriented Programming @ Cefalo Covers core principles of Object Oriented Programming. Achievement: <i>Certificate of Excellence</i>	05/2018
Community Contributions	Top 3% contributor @ StackOverflow Gained 13600+ reputation in <i>StackOverflow</i> .	Username: <i>arshovon</i>
	Contribution @ PyPI Developed <i>Bangla</i> , <i>AutoLike</i> , <i>Opener</i> , and <i>CopyUSB</i> PyPI listed packages.	Username: <i>arsho</i>
	Judge @ UIC Undergraduate Research Forum 2024 Served as a judge under Office of Undergraduate Research and External Fellowships.	04/2024
	Judge @ Research Expo, UAB Served as a judge under Service Learning and Undergraduate Research, UAB.	08/2021 - 08/2023
	Volunteer @ The World Games 2022, Birmingham, USA Served as a volunteer for the International World Games Association (IWGA).	07/2022
	Webmaster @ IEEE Student Branch, JU Developed and maintained IEEE SB, JU website.	05/2015 - 10/2016