AHMEDUR RAHMAN SHOVON

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Education	**PhD Student (3rd year)**	**2023-cont.**
	Department of Computer Science, University of Illinois Chicago	Chicago, IL
	Advisor: Dr. Sidharth Kumar	
	GPA: 4.00	
	PhD Student - Blazer Graduate Research Fellow	**2021-2023**
	Department of Computer Science, University of Alabama at Birmingham	AL
	Advisor: Dr. Sidharth Kumar	
	GPA: 4.00	
	Master of Science in Information Technology	**2016-2017**
	Institute of Information Technology, Jahangirnagar University	Dhaka, Bangladesh
	Advisor: Dr. Md Whaiduzzaman	
	GPA: 3.67	
	Thesis: An Optimized RESTful E-Governance Application Framework for People Identity Verification in Cloud	
	Bachelor of Science in Information Technology	**2012-2016**
	Institute of Information Technology, Jahangirnagar University	Dhaka, Bangladesh
	Advisor: Dr. Risala Tasin Khan	
	GPA: 3.73	
	Project: EasyC: A platform for learning C programming	

Research Interest	**High Performance Computing**
	Data Analytics
	Cloud Computing

Experience	**Graduate Research Assistant**	**08/2023 - cont.**
	Department of Computer Science, University of Illinois Chicago	Chicago, IL
	High-performance Automated Reasoning and Programming Lab (HARP)	

- Developing GPU applications focusing on high-performance relational algebra primitives.
- Extending the topological data analysis pipeline to apply persistent homology on temporal brain networks.
- Evaluating different parallel programming models to solve iterative high-performance relational algebra tasks.

	Graduate Student Intern (WJ Cody Associate)	**05/2023 - 08/2023**
	Argonne National Lab	Lemont, IL
	Mathematics and Computer Science Division	

- Extended Rosetta-Bench, a benchmark suite and framework for heterogeneous computing focusing on the performance benchmarks of parallel programming models.
- Collaborated with Argonne scientists to gain insights into runtime systems, compilers, and other aspects of computational science.

- Worked in a research environment that includes access to one of DOE's leadership-class computers and the Argonne Leadership Computing Facility.

Graduate Research Assistant (Blazer Fellow)   08/2021 - 08/2023
University of Alabama at Birmingham   Birmingham, AL
High-performance Automated Reasoning and Programming Lab (HARP)
- Demonstrated the feasibility of a high-performance relational algebra backend for a subset of Datalog applications leveraging GPU parallelism [W1, C5].
- Developed a visualization tool to create Kaplan Meier survival probability graph for cancer data analysis [J2].
- Designed a topological data analysis pipeline to apply persistent homology on brain networks resting state fMRI data [J3].

Assistant Programmer   06/2019 - 08/2021
ICT Division, Government of Bangladesh   Dhaka, Bangladesh
Department of Information & Communication Technology
- Designed and implemented e-File application ranking platform.
- Contributed to the development of e-Governance and e-Services solutions.
- Actively served to achieve Smart Cities and Communities to attain Sustainable Development Goals (SDG).

Software Engineer   12/2017 - 06/2019
Cefalo Bangladesh Ltd.   Dhaka, Bangladesh
NHST Global Team
- 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% using Django REST framework and ReactJS.
- Contributed to building a CI/CD pipeline to automate the application deployment.

Graduate Research Assistant   01/2016 - 12/2018
Jahangirnagar University   Dhaka, Bangladesh
Mobile Cloud Computing and Big Data Research Group (MCCBD)
- Developed RESTful E-Governance application framework for identity verification using deep learning in cloud [B1].
- Applied combined approach of tokenization and mining to secure and optimize Big Data in cloud storage [C1].
- Configured a private cloud with two nodes using OpenStack.

Teaching Experience

Teaching Assistant   01/2016 - 12/2016
Institute of Information Technology, Jahangirnagar University   Dhaka, Bangladesh
Operating System Lab (undergraduate level)
- Led 2-hour weekly lab sessions on shell programming.
- Assisted students with projects and assignments, offering guidance and constructive feedback.
- Designed and evaluated bi-weekly tests on operating system topics.

Bibliometrics

Journal Articles: 3, Book Chapter: 1, Workshop Papers: 2, Conference Papers: 6
Citations: 775, h-index: 6 (retrieved from Google Scholar on 01/28/2024)

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. Impact Factor: 4.5, Q1 Journal.

[**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. Impact Factor: 5.71, Q1 Journal.

[**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. Impact Factor: 5.22, Q1 Journal.

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 LJ. (eds) Cloud Computing – CLOUD 2018. Lecture Notes in Computer Science, vol 10967. Springer, Cham.* https://doi.org/10.1007/978-3-319-94295-7_19.

Workshop Papers

[**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: *2021 IEEE Workshop on Visual Analytics in Healthcare (VAHC)*, Melbourne, Australia, 2023, in conjunction with IEEE VIS 2023.

[**W1**] **Ahmedur Rahman Shovon**, Landon Richard Dyken, Oded Green, Thomas Gilray, and Sidharth Kumar, "**Accelerating Datalog applications with cuDF**", In: *2022 IEEE/ACM Workshop on Irregular Applications: Architectures and Algorithms (IA3)*, Dallas, TX, USA, 2022 pp. 41-45 in conjunction with SC22. doi: 10.1109/IA356718.2022.00012.

Conference Papers

[**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: *Proceedings of the International Conference on High Performance Computing in Asia-Pacific Region (HPCAsia 2024)*, Nagoya, Japan, 2024 pp. 127–133. doi: 10.1145/3635035.3635047.

[**C5**] **Ahmedur Rahman Shovon**, Thomas Gilray, Kristopher Micinski, Sidharth Kumar, "**Towards Iterative Relational Algebra on the GPU**", In: *2023 USENIX Annual Technical Conference (USENIX ATC 23)*, Boston, MA, USA, 2023 pp. 1009-1016. ISBN: 978-1-939133-35-9.

[**C4**] Md Whaiduzzaman, Alistair Barros, **Ahmedur Rahman Shovon**, Md Razon Hossain, and Colin Fidge, "**A Resilient Fog-IoT Framework for Seamless Microservice Execution**", In: *IEEE International Conference on Services Computing (SCC) - 2021*, pp. 213-221. doi: 10.1109/SCC53864.2021.00034

[**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: *International Conference on Information and Communication Technology for Sustainable Development (ICICT4SD) - 2021*, pp. 456-460.

[**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: *International Conference on Advances in Science, Engineering and Robotics Technology (ICASERT) - 2019*, pp. 1-6. doi: 10.1109/ICASERT.2019.8934660

[**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: *IEEE R10 Humanitarian Technology Conference (R10-HTC) - 2017*, pp. 83-88. doi: 10.1109/R10-HTC.2017.8288912

Reviewer Recognition	**Journal: Sustainable Cities and Society (SCS)** *Impact Factor: 7.587*, Publisher: Elsevier.

Awards

USENIX ATC Student Grant Awarded by the USENIX Association.	2023
Blazer Graduate Research Fellowship Awarded by the University of Alabama at Birmingham.	2021
National Science and Technology (NST) Fellowship Awarded by the Ministry of Science and Technology, Bangladesh.	2016-17
University Merit Scholarships Awarded by the Jahangirnagar University.	2012-16
National Merit Scholarship Awarded by the Ministry of Education, Bangladesh.	2011

Achievements

Winner @ oneAPI Hackathon: CUDA to SYCL Migration Ported CUDA project to SYCL with automatic and manual interventions.	10/2023
Participant @ 1st Parallel Programming Marathon SC 2022 Optimized sequential programming challenges on Cori (NERSC supercomputer).	11/2022
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 challenges at Hackerrank.	07/2016
7th @ IEEEXtreme Programming Competition 9.0 Achieved 7th position out of 2,477 teams, Team: *JUIITCoders*.	10/2015
1st @ Intra University Programming Contest, JU Achieved 1st position in *Intra University Programming Contest, JU, 2015*.	08/2015

Training	**Hands-on HPC Workshop @ ALCF**	10/2023

Training

Hands-on HPC Workshop @ ALCF — 10/2023
Covers topics to utilize Polaris and AI Testbeds focusing on porting applications to heterogeneous architectures (CPU + GPU) on ALCF systems.

AI for Science on Supercomputers @ ALCF — 12/2022
Covers topics to develop and apply AI solutions and scale AI training for science on ThetaGPU (Argonne supercomputer). *(certificate link)*

Hands-On HPC @ OLCF — 12/2022
Covers essential tools for High-Performance Computing, including MPI, OpenMP, and GPU programming using Summit supercomputer. *(certificate link)*

Fundamentals of Accelerated Computing @ NVIDIA — 06/2022
Covers topics of accelerating CPU-only applications to run their latent parallelism on GPUs utilizing CUDA programming model. *(certificate link)*

Effective Object Oriented Programming @ Cefalo — 05/2018
Covers core concepts and principles of Object Oriented Programming. Achievement: Certificate of Excellence (Distinction) *(certificate link)*

Technical Skills

Advanced: Python, JavaScript, Git, LaTeX.
Intermediate: C++, CUDA, MPI, Bash, AWS.
Basic: NoSQL, Java, SQL, JIRA, PHP.
CI/CD: Docker, Github actions, Travis CI.

Community Contributions

Judge @ Spring 2023 Research Expo, UAB — 04/2022
Served as a judge under Service Learning and Undergraduate Research, UAB.

Judge @ Fall 2022 Research Expo, UAB — 11/2022
Served as a judge under Service Learning and Undergraduate Research, UAB.

Volunteer @ The World Games 2022, Birmingham, USA — 07/2022
Served as a volunteer for International World Games Association (IWGA).

Judge @ Spring 2022 Research Expo, UAB — 04/2022
Served as a judge under Service Learning and Undergraduate Research, UAB.

Judge @ Fall 2021 Research Expo, UAB — 11/2021
Served as a judge under Service Learning and Undergraduate Research, UAB.

Webmaster @ IEEE Student Branch, JU — 05/2015 - 10/2016
Developed and maintained IEEE SB, JU website.

Top 3% contributor @ Stack Overflow — Username: *arshovon*
Gained 13000+ reputation in *StackOverflow* where developers learn and build careers.

Contribution @ Github — Username: *arsho*
Contributor and maintainer of several popular open source projects in *Github*.

Contribution @ PyPI — Username: *arsho*
Developed *Bangla*, *AutoLike*, *Opener*, and *CopyUSB* PyPI listed packages.