Md Rajib Hossen

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SUMMARY

Ph.D. Candidate at the University of Texas at Arlington. Currently, I'm working on managing resources for microservices, identifying resource bottlenecks with a light-weight approach, and managing resource oversubscription in HPC Clusters. I'm looking forward to gain more research experience where I can apply my existing knowledge and learn new things to widen my research domain.

EDUCATION

The University of Texas at Arlington | Arlington, TX **Expected Graduation: Dec 2023**

PH.D. IN COMPUTER SCIENCE | Supervisor: Dr. Mohammad A. Islam

- GPA: 4.0/4.0 | Relevant Courses: Advanced Algorithms; Machine Learning; Cloud Computing; Distributed Systems

Khulna University of Engineering & Technology | Bangladesh **May 2015**

B.SC. IN COMPUTER SCIENCE

- GPA: 3.63/4.0 | Relevant Courses: Data Structure; Algorithms; Machine Learning; Data Mining

PUBLICATIONS

- **Md Rajib Hossen**, Kishwar Ahmed, Mohammad Islam. 2023. Market Mechanism-Based User-in-the-Loop Scalable Power Oversubscription for HPC Systems. The 29th IEEE High-Performance Computer Architecture (**HPCA 2023**)
- **Md Rajib Hossen**, Mohammad Islam, Kishwar Ahmed. 2022. Practical Efficient Microservice Autoscaling with QoS Assurance. The 31st Symposium on High-Performance Parallel and Distributed Computing (**HPDC 2022**)
- **Md Rajib Hossen**, Mohammad Islam. 2022. Towards Efficient Microservices Management Through Opportunistic Resource Reduction. The 13th Conference on Cloud Computing, GRIDs, and Virtualization (**Cloud Computing 2022**)
- **Md Rajib Hossen**, Mohammad Islam. 2022. Practical Efficient Microservice Autoscaling. ACM International Conference on Measurement and Modeling of Computer Systems (**SIGMETRICS 2022**) (Poster)
- **Md Rajib Hossen**, Mohammad Islam. 2020. Mobile Task Offloading Under Unreliable Edge Performance. Workshop on AI in Networks and Distributed Systems (WAIN 2020, collocated with Performance'20) (Workshop)
- A. K. Paul, **M. R. Hossen**, B. Sarker and M. C. Urmi, "An approach to demand side load curtailment for the future intelligent and smart power grid of Bangladesh," 2014 International Conference on Electrical Engineering and Information & Communication Technology, 2014, pp. 1-7.

RESEARCH AND WORK EXPERIENCES

Graduate Student Researcher | The University of Texas at Arlington | Arlington, TX **Aug 2018 – Cont**.

- Reduced total CPU usages of microservices by more than 33% compared to state-of-the-art resource managers
- Develop novel algorithm to automatically optimize resources of microservices that works on top of kubernetes
- Identified bottleneck services using container and node metrices without violating Quality of Services
- Implemented several API microservices in Python, Go to deploy in Kubernetes environment
- Deployed a centralized monitoring environment (Grafana, InfluxDB) which gather system metrics as well as docker run-time metrics
- Decreased mobile task completion time with the same energy as greedy using intelligent mobile edge offloading
- Developed a system to address the power surge of power oversubscribed HPC clusters by incentivizing the users

Software Engineer | Goava Sales Intelligence AB | Dhaka, Bangladesh **Jan 2018 - July 2018**

- Accelerated development phase and conserved resources of the company by introducing APIs for providing personalized recommendations, custom filtering, and targeted companies for B2B
- Developed an API Server that provides results of queries from Elasticsearch and S3, and applies Machine Learning to satisfy client requirements

Software Engineer | IPvision Soft Ltd | Dhaka, Bangladesh **Sep 2016 - Dec 2017**

- Improved the efficiency of a cluster deployment of 50 Node by 75% using automation scripts in Python
- Reduced cloud computing cost by 83% compared with Amazon AWS by deploying a private cluster
- Incorporated a cloud dashboard using Django framework to provide monitoring for the private cluster using OpenStack, Ceph, GlusterFS, and custom API
- Wrote automation scripts in python to deploy private cloud using OpenStack, Ceph storage system integration, Hadoop Cluster deployment.

Jr. Software Engineer | Workspace Infotech Ltd | Dhaka, Bangladesh **July 2015 - Aug 2016**

- Delivered mobile application backend several weeks earlier than the deadline, boosted client's business
- Proven Adaptability in software development by working with back-end and front-end systems simultaneously

SKILLS

- **Programming Languages**: Python, SQL, C++, Java
- **Tools and Technologies**: Kubernetes, Docker, Prometheus, Linux, AWS/Azure, Pytorch, Hadoop, Django

AWARDS & ACHIEVEMENTS

HPDC'22 Student Travel Grant Award **June 2022**

- Received NSF Travel Grant to attend the HPDC 2022 Conference in Minneapolis, Minnesota, USA

I-Engage Mentorship Summer Research Grant **June 2022 – Aug 2022**

Office of Graduate School at UTA

- The I-Engage program by the graduate office offers doctoral students an opportunity to practice mentorship skills and exposes undergraduates to cutting-edge research in their field. We submitted a proposal to conduct research with an undergraduate student and got funding to continue the research.

Best Poster Awards (Honorable Mention) **Feb 2022**

Student Computing Research Festival (SCRF)@The University of Texas at Arlington

- Annual Student Computing Research Festival (SCRF) is an all-day event that allow students of any major to showcase their computing-related work in and out of classrooms, learn from professional role models, and engage with leaders of industry and society

2nd Place in Best App (Mobile and Desktop) Development **Mar 2014**

App Development Hackathon by Dhaka University IT Societ

- We achieved second place (among 50 teams) for developing an application within three days in a Hackathon

Dean's List Award **Feb 2013 – May 2015**

Khulna University of Engineering and Technology

- Dean's List Award for outstanding academic results (GPA > 3.75/4.0) for 2 consecutive years

ACTIVITIES AND SERVICES

Innovation Day Judge **April 2022**

- Reviewed several posters submitted for annual showcase of research and innovation from Engineering Students

Student Volunteer **Nov 2020**

- Volunteered at the ACM SIGPLAN conferences (OOPSLA, SPLASH)

Student Volunteer **Feb 2014**

- Volunteered at the 1st EICT Conference at Dhaka, Bangladesh

President – Bangladesh Student Organization at University of Texas at Arlington **Aug 2021 – July 2022**

- Lead student organization with 200+ members to arrange various cultural and sports events.

TEACHING ASSISTANT

- **Algorithm Analysis and Design**: Fall and Spring of 2019, 2020, 2021, 2022
- **Introduction to Computer Science**: Summer of 2020, 2021
- **Professional Practice**: Summer 2022