# Md Shahriar Iqbal

## Personal Information

miqbal@email.sc.edu 241 S Bull St, Columbia SC 29205 +1-803-238-7606
https://iqbalshahriar.github.io/ shahriariqbal iqbal128855 MS. Iqbal

## Summary

I have received comprehensive training in Machine Learning/Artificial Intelligence (ML/AI) to solve real-world complex problems. Active learning, Bayesian optimization, causal inference, and machine learning for systems are some examples. I have a diverse background in academic research and industrial engineering, as well as experience designing ML systems ranging from developing efficient ML algorithms to deploying scalable solutions into production. As a result, I want to work at the intersection of research problems and their practical solutions.

## Education

University of South Carolina, Columbia, SC (Aug 2018 - Dec 2023 (Expected))
*Doctor of Philosophy in Computer Science and Engineering*

- Advisor : Dr. Pooyan Jamshidi
- Thesis : Performance debugging and optimization of highly configurable software systems.

University of Central Florida, Orlando, FL (Aug 2013 - Dec 2014)
*Master of Science in Electrical Engineering*

- Advisor : Dr. Aman Behal
- Thesis : Learning to grasp unknown objects using weighted Random Forest algorithm from selective image and point cloud feature.

University of Dhaka, Bangladesh (Apr 2006 - May 2011)
*Bachelor of Science in Applied Physics, Electronics and Communication Engineering*

## Experience

University of South Carolina, Columbia, SC – AISys Lab (Aug 2018 - Current)
*Graduate Research Assistant*

- Developed `Unicorn`, a performance debugging tool, to detect the root-causes of non-functional faults resulting due to misconfigurations and fix them using graphical causal models by intervention using ranked counterfactual queries.
- Developed an optimization tool `CAMEO` to optimize performance e.g., latency, energy in production reusing knowledge learned from optimizing performance in the staging when distribution shifts occur.
- Developed a cost-aware multi-objective optimization algorithm `FlexiBO` to find Pareto optimal solutions for Deep Neural Network systems deployed on resource constrained edge devices e.g., NVIDIA Jetson, TPU etc.

Hewlett Packard Enterprise, Houston, TX – Data Center Infrastructure (Nov 2015 - Nov 2017)
*System Software Engineer II*

- Developed the analytics segment for `HPE Workload Advisor` that utilizes a message passing protocol between subcomponents in a distributed environment to identify bottlenecks.
- Developed a system to identify irregular workload behavior of enterprise applications in rack, blade, and tower servers using a one shot classifier with semantics.
- Developed a performance monitoring tool `LinuxKI` that tracks Linux network system calls to capture inbound and outbound statistics per socket, capture futex calls and C-state transitions for each CPU that is used by internal HPE engineers for system performance tuning.

University of Central Florida, Orlando, FL – Control Systems Lab (Aug 2013 - Dec 2014)
*Graduate Teaching Assistant*

- Created automated force-closure grasping algorithms and interfaced the Baxter Research Robot to the IH2 Azzura hand for stable grasping and path planning.
- Assisted designing course material for Electrical Machine course, graded homework and programming assignments and acted as a web master.

## Publications

### Conferences and Journals

ICPE'22 – `MS. Iqbal`, M. Leznik, I. Trubin, A. Lochner, P. Jamshidi, A. Bauer ; Change Point Detection for MongoDB Time Series Performance Regression ; International Conference on Performance Engineering, April 2022, Beijing, China. Acceptance Rate : 24%.

EuroSys'22 – `MS. Iqbal`, R. Krishna, MA. Javidian, B. Ray and P. Jamshidi ; Unicorn : Reasoning about Configurable System Performance through the Lens of Causality ; European Conference on Computer Systems, April 2022, Rennes, France. Acceptance Rate : 27.6%.

JAIR'23 – `MS. Iqbal`, J. Su, L. Kotthoff and P. Jamshidi ; FlexiBO : A Decoupled Cost-Aware Multi-Objective Optimization Approach for Deep Neural Networks ; Journal of Artificial Intelligence Research, June 2023.

SoCC'23 – `MS. Iqbal`, Z. Zhong, I. Ahmad B. Ray and P. Jamshidi ; CAMEO : Performance Optimization of Configurable Systems when Deployment Environment Changes ; ACM Symposium on Cloud Computing, November 2023, Santa Cruz, CA. Acceptance Rate 27%.

### Workshops and Short Papers

OpML@USENIX'19 – `MS. Iqbal`, L. Kotthoff and P. Jamshidi ; Transfer Learning for Performance Modeling of Deep Neural Network, May 2019, Santa Clara, CA.

MLSys@NeurIPS'20 – `MS. Iqbal`, R. Krishna, MA. Javidian, B. Ray and P. Jamshidi ; CADET : Debugging Misconfigurations using Counterfactual Reasoning ; Machine Learning for Systems Workshop at Neural Information Processing Systems, Dec 2020, Zoomville.

AutoML'23 – `MS. Iqbal`, J. Su, L. Kotthoff and P. Jamshidi ; Getting the Best Bang For Your Buck : Choosing What to Evaluate for Faster Bayesian Optimization ; International Conference on Automated Machine Learning, Sep 2022.

## Awards and Services

— Reviewer of Journal of Systems (JSys).
— Reviewer for Empirical Software Engineering Journal.
— Reviewer for MLSys@NeurIPS 2021, 2022, and 2023.
— Reviewer for ICPE Data Challenge Track 2024.
— Artifact Evaluation Committee Member for OSDI 2022 and ATC 2022.
— Member of Predictive Data Analytics Group at SPEC Research.
— Hewlett Packard Enterprise Innovation Recognition.
— Graduate Fellowship at the University of Central Florida.
— Undergraduate Talentpool Scholarship at the University of Dhaka.

## Invited Talks

— Carnegie Mellon University, ABLE Research Group, April 2022 and Nov 2020.
— Thirteenth Meeting on Feature-oriented Software Development (FOSD), April 2021.
— Computer Science Department Seminar at Lund University, Jan 2021.

## Skills

— Programming Languages : Python, C, C++.
— Tools : Spark, Hadoop, Rabbitmq, Docker, CUDA, Kubernetes, Docker.
— Databases : Cassandra, MongoDB, Elasticsearch, Postgres.
— Machine Learning : Tensorflow, PyTorch, KubeFlow, MLFlow, CuDNN.
— OS : Linux, Windows, Android.