Aftab Hussain

Graduate Researcher in Computer Science
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Department of Computer Science
University of Houston

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Google Scholar, *LinkedIn*, *Github*

Research Interests

My research interests are in the areas of software engineering, big data analytics, security, systems, and information visualization. I am currently collaborating in the domain of fuzzing at the Software Engineering Research Group at UH, advised by Prof. Mohammad Amin Alipour. In addition, I am learning about the behavior of neural models in the SE domain.

Skills

Technologies
C, C++, Java, Python, SQL, R, .NET, Latex
git, Linux, gdb, bash
AFL, tensorflow (learning)

Communication
Delivering lectures and presentations, teaching, student mentoring, conducting technical contests, organizing events, writing research proposals
Spoken languages: English, Bengali, French, Arabic, Hindi

Education

2020 - 2024 (expected) — **PhD** in Computer Science,
University of Houston (UH)
Focus: Software Testing, Test Generation, Fuzzing

2013 - 2015 — **M.Sc.** in Software Engineering,
University of California, Irvine (UCI)
GPA: 3.74/4

2010 - 2012 — **M.Sc. Engg.** in Computer Science and Engineering,
Bangladesh University of Engineering and Technology (BUET)
Focus: Software Restructuring using Hierarchical Clustering
GPA: 3.83/4

2005 - 2009 — **B.Tech.** in Computer Science and Engineering,
Institute of Engineering and Management (IEM), Kolkata
Focus: Steganography
GPA: 8.01/10

Experience

Research

Graduate Researcher at Department of Computer Science, University of Houston — Jul 2020 to *present*
Lab: Software Engineering Research Group at UH

Graduate Researcher at Department of Computer Science, University of California, Irvine — Mar 2015 to Jun 2020
Areas: Scalable static program analysis, graph processing, cyber security
Labs: Mars Systems, Programming Languages and Systems Group

Graduate Researcher at Department of Informatics, University of California, Irvine — Sep 2013 to Mar *2015*
Areas: Big data analytics, software repository mining
Lab: Mondego Group

Research Associate at Department of Computer Science, Bangladesh University of Engineering and Technology — Dec 2012 to Aug 2013

Areas: Graph clustering, software visualization
Labs: Graph Drawing and Info Visualization Lab, Samsung Innovation Lab

Research Assistant at Department of Computer Science, Bangladesh University of Engineering and Technology — Sep 2010 to Jun 2011
Areas: Planar graph drawing, wireless sensor networks
Lab: Graph Drawing and Info Visualization Lab

Teaching

Teaching Assistant at Department of Computer Science, University of Houston — Aug 2020 to *present*

Teaching Assistant at Bren School of Information and Computer Sciences, University of California, Irvine — Jan 2014 to Jun 2020

Reader at Bren School of Information and Computer Sciences, University of California, Irvine — Sep 2013 to Dec 2013

Industry

Software Engineering Intern at NextTel Communication, Dhaka, Bangladesh — Mar 2010 to Apr 2010
Project: GUI design of pharmaceutical mobile application

Software Engineering Trainee at CMC Kolkata, (A TATA Enterprise), Kolkata, India — Jul 2008
Project: Design of hospital database management system

Publications

Conference Publications

C.5. Vikram Narayanan, Abhiram Balasubramanian, Charlie Jacobsen, Sarah Spall, Scott Bauer, Michael Quigley, Aftab Hussain, Abdullah Younis, Junjie Shen, Moinak Bhattacharyya, and Anton Burtsev. LXDs: Towards isolation of kernel subsystems. In *2019 USENIX Annual Technical Conference (USENIX ATC 19)*, Renton, Washington, US, 2019 (paper)

C.4. Kai Wang, Aftab Hussain, Zhiqiang Zuo, Guoqing Xu, and Ardalan Amiri Sani. Graspan: A single-machine disk-based graph system for interprocedural static analyses of large-scale systems code. In *22nd ACM International Conference on Architectural Support for Programming Languages and Operating Systems (ASPLOS '17)*, Xi'an, China, 2017 (paper)

C.3. Di Yang, Aftab Hussain, and Cristina Videira Lopes. From query to usable code: An analysis of stack overflow code snippets. In *13th International Conference on Mining Software Repositories (MSR '16, Co-located with ICSE '16)*, Austin, Texas, US, 2016 (paper)

C.2. Iqbal Hossain, Shaheena Sultana, Aftab Hussain, Nazmun Nessa Moon, and Md. Saidur Rahman. L-shaped drawings of series-parallel graphs. In *International Mathematics Conference*, Dhaka, Bangladesh, 2013 (paper)

C.1. Aftab Hussain and Md. Saidur Rahman. A new hierarchical clustering technique for restructuring software at the function level. In *6th India Software Engineering Conference (ISEC '13)*, New Delhi, India, 2013 (paper)

Journal Publication

J.1. Zhiqiang Zuo, Kai Wang, Aftab Hussain, Ardalan Amiri Sani, Yiyu Zhang, Shenming Lu, Wensheng Dou, Linzhang Wang, Xuandong Li, Chenxi Wang, and Guoqing Harry Xu. Systemizing interprocedural static analysis of large-scale systems code with graspan. *ACM Trans. Comput. Syst.*, 38(1–2), July 2021 (paper)

Workshop Publications

W.2 Aftab Hussain. Graspan: A single-machine disk-based graph system for interprocedural static analyses of large-scale systems code. In *17th Southern California Workshop on Programming Languages and Systems (SoCal PLS '16)*, Irvine, California, US, 2016

W.1 Aftab Hussain and Md. Saidur Rahman. A new clustering technique using (k,w)-core decomposition for restructuring software functions. In *Workshop on Graph Drawing and Graph Algorithms (GDGA '13)*, Dhaka, Bangladesh, 2013

Posters

P.3 Kai Wang, Aftab Hussain, Zhiqiang Zuo, Guoqing Xu, and Ardalan Amiri Sani. Graspan: A single-machine disk-based graph system for interprocedural static analyses of large-scale systems code. In *22nd ACM International Conference on Architectural Support for Programming Languages and Operating Systems (ASPLOS '17')*, Xi'an, China, 2017 (poster)

P.2 Aftab Hussain. Graspan: A single-machine disk-based graph system for interprocedural static analyses of large-scale systems code. In *Student Research Competition, 37th ACM SIGPLAN conference on Programming Language Design and Implementation (PLDI '16)*, Santa Barbara, California, US, 2016

P.1 Aftab Hussain. Graspan: A single-machine disk-based graph system for interprocedural static analyses of large-scale systems code. In *Computer Science Research Showcase, University of California, Irvine*, Irvine, California, US, 2016

Technical Reports

T.10 Md Rafiqul Islam Rabin, Aftab Hussain, Vincent J. Hellendoorn, and Mohammad Amin Alipour. Memorization and generalization in neural code intelligence models. Technical report, University of Houston, Carnegie Mellon University, 2021 (report)

T.9 Aftab Hussain and Anton Burtsev. Common vulnerabilities and exposures in the cloud. Technical report, University of California, Irvine, 2020 (report)

T.8 Aftab Hussain, Vikram Narayanan, and Anton Burtsev. An Implementation Overview of an IDL Generation Framework Based on DSA. Technical report, University of California, Irvine, 2018 (report)

T.7 Harry Xu, Zhiqiang Zuo, Kai Wang, Aftab Hussain, and Khanh Nguyen. Systemized program analyses: A big data perspective on scaling large-scale code analyses. Technical report, University of California, Irvine, 2017 (report)

T.6 Aftab Hussain and Guoqing Xu. GraphDTC: A graph processing system for scalable and precise program analysis. Technical report, University of California, Irvine, 2015 (report)

T.5 Aftab Hussain, Omar Asadi, and Debra J. Richardson. A holistic look at requirements engineering practices in the gaming industry. Technical report, University of California, Irvine, 2018 (report)

T.4 Vaibhav Saini, Hitesh Sajnani, Jaewoo Kim, Aftab Hussain, and Cristina Lopes. Instant clone finder: Detecting clones during software development. Technical report, University of California, Irvine, 2015 (report)

T.3 Di Yang, Aftab Hussain, and Cristina Videira Lopes. Effect of follow and watch relationships in pull requests. Technical report, University of California, Irvine, 2014 (report)

T.2 Rezvan Ghaderi, Shahrzad Ahmadpour, and Aftab Hussain. Analyzing stackoverflow response time for java topics using code clustering. Technical report, University of California, Irvine, 2014 (report)

T.1 Vaibhav Saini and Aftab Hussain. A new approach for fixing bugs in code clones: Fix it there too (fitt). Technical report, University of California, Irvine, 2014 (report)

Selected Projects

Enhancing Fuzzing for better Bug Detection and Triaging

2020-present

This work focuses on designing and building techniques for improving the effectiveness and efficiency of fuzzing (automated random testing at scale) of parser and compiler libraries, networking security libraries, image processors, and other important software tools that are used in billions of devices world-wide. By leveraging modern fuzzers like Google's AFL, we aim to improve vulnerability detection and triaging.

> Currently investigating the effects of test reduction approaches on fuzzing performance.

LXDs: Towards Isolation of Kernel Subsystems (USENIX ATC '19)

2017-2019 *Supported by NSF (Grants 1319076, 1527526, 1817120), Google* CODE PAPER

This work on Lightweight Execution Domains (LXDs) takes a step towards enabling isolation in a full-featured operating system kernel. LXDs allow one to take an existing kernel subsystem and run it inside an isolated domain with minimal or no modifications and with a minimal overhead.

- Contributed towards implementing an Interface Definition Language that captures decomposition patterns typically used in the kernel such as exported functions, data structures passed by reference, function pointers, etc.
- Contributed towards the development of an IDL compiler that can generate the runtime glue-code code required for decomposition – The compiler works as a source-to-source translator from the LXD IDL to C.
- Analyzed an IDL generation framework based on the Data Structure Analysis (DSA) approach by Chris Lattner on program graphs. Showed how incorrect information can traverse between nodes of a graph in DSA, under certain circumstances.

Graspan: Parallel Graph System for Big Code Analysis (ASPLOS '17)

2015-2017 *Supported by NSF (Grants CNS-1321179, CCF-1409829, CNS-1613023)* CODE PAPER POSTER TUTORIAL

We built a disk-based parallel graph system, Graspan, that uses a novel edge-pair centric computation model to compute dynamic transitive closures on very large program graphs. We implement context-sensitive pointer/alias and dataflow analyses on Graspan. An evaluation of these analyses on program graphs of large codebases such as Linux shows that their Graspan implementations scale to millions of lines of code. Computations in Graspan took around two to less than 12 hrs, and the largest graph generated had 1.1 billion edges.

Graspan implementations are also much simpler to implement than their original implementations. After augmenting existing checkers with these analyses, the checkers uncovered 132 new NULL pointer bugs and 1308 unnecessary NULL tests in Linux 4.4.0-rc5, PostgreSQL 8.3.9, and Apache httpd 2.2.18.

- Designed and implemented the partitioning and scheduling algorithms of Graspan, that allow it to scalably manage large graphs in memory of a single machine for computation.
- Designed and implemented the post-processing phase of Graspan, which entails the necessary management of graph partitions after they have undergone computation.
- Contributed towards formally defining Graspan's core computation model, which computes dynamic transitive closures.
- Ran experiments where I executed Graspan on large program graphs of our test subjects.
- Co-led codebase migration efforts from Java to C++.

Featured in the tutorial, Systemized Program Analyses at ASPLOS '17.
Invited for presentation at SoCal PLS '16, and for poster presentation at PLDI SRC '16.

Analysis of Usability of Stack Overflow Code (MSR '16)

2013-2015 *Supported by NSF (Grant CCF-1018374)* PAPER

Besides being useful for software developers, annotated Stack Overflow snippets can potentially serve as the basis for automated tools that provide working code solutions to specific natural language queries. Towards this goal, we investigated the compilability of Stack Overflow code snippets. A total of 3 million code snippets were analyzed across four languages: C#, Java, JavaScript, and Python. Python and JavaScript proved to be the languages for which the most code snippets are usable. Conversely, Java and C# proved to be the languages with the lowest usability rate.

- Contributed towards designing our approach of how we could process and classify code snippets at the different levels of usability – parsability, compilability, and runnability.
- Extracted and analyzed usability of 300,000+ StackOverflow Java code samples.
- Implemented heuristic-based repair techniques that improved parse rates of Java snippets from 6.22% to 19.24%.

Software Restructuring using Hierarchical Clustering (ISEC '13)

2011-2013 PAPER THESIS

In this work, we develop a new hierarchical clustering technique for restructuring software that improves refactoring visualization by at least 29.23% over 3 widely popular clustering algorithms, is 59.72% faster, and yields the same code quality improvements on Java functions extracted from real-life industrial programs and published academic papers.

- Designed and implemented a new hierarchical clustering technique, the (k, w)-Core Clustering ((k, w)-CC) technique, for restructuring software at the function level that generates clustering trees with lower number of cut-points, which yield a lower number of redundant clusters.
- Introduced a new graph-theoretic construct, known as the (k,w)-core, which characterizes a specific configuration of nodes connected to each other by weighted edges.
- Evaluated (k, w)-CC with four previous HAC techniques: single linkage algorithm (SLINK), complete linkage algorithm (CLINK), weighted pair group method of arithmetic averages (WPGMA), and adaptive k-nearest neighbour algorithm (A-KNN).

Invited for presentation in GDGA (Graph Drawing and Graph Algorithms) '13.

Research Presentations

P.6 Graspan: A Single-machine Disk-based Graph System for Interprocedural Static Analyses of Large-scale Systems Code, Guest Lecture, CS201P Computer Security, UCI, February 2020, Irvine, California, US

P.5 Graspan: A Single-machine Disk-based Graph System for Interprocedural Static Analyses of Large-scale Systems Code, SoCalPLS, November 2016, Irvine, California, US

P.4 Graspan: A Single-machine Disk-based Graph System for Interprocedural Static Analyses of Large-scale Systems Code, PLDI SRC, (poster), June 2016, Santa Barbara, California, US

P.3 Graspan: A Single-machine Disk-based Graph System for Interprocedural Static Analyses of Large-scale Systems Code, UCI CS Research Showcase, (poster), June 2016, Irvine, California, US

P.2 A New Hierarchical Clustering Technique for Restructuring Software at the Function level, ISEC, February 2013, New Delhi, India

P.1 A New Clustering Technique using (k,w)-Core Decomposition for Restructuring Software Functions, GDGA, January 2013, Dhaka, Bangladesh

Teaching

Please visit https://aftabhussain.github.io/Teaching/index.html for my shared class content: class videos, slides, code, etc.

Pedagogical Training

Completed CIRTL Associate Level Certification, UCI — July 2020
Completed the Certificate in Teaching Excellence Program, UCI — June 2020
Advanced TA Training, Prof. David G. Kay, UCI — Winter 2018
TA Training, Prof. David G. Kay, UCI — Fall 2013

Courses

Courses served as Teaching Assistant:

B.S. Program, UH

Operating Systems (CS 261P), Prof. Jehan-François Pâris — Spring 2021
- Guided students through coding tasks on job scheduling, socket programming, and multithreading.

Software Design (CS 201P), Prof. Mohammad Amin Alipour — Fall 2020
- Conducted and reviewed demos of group projects on the development of a task management system.
- Gave advice on functionality requirements and coding principles around style, efficiency, and security.

M.C.S Program, UCI

Data Structures (CS 261P), Prof. Kevin Wortman — Spring 2020
- Conducted a live group coding activity session on DS coding via Zoom Breakrooms.
- Designed and conducted a timed workout group activity, consisting of course exam-style questions, to help students with midterm preparation.

Computer Security (CS 201P), Prof. Stanislaw Jarecki — Winter 2020
- Prepared video tutorials and delivered lectures on network security tools.
- Conducted lab discussion sessions on projects from SEED Labs.

Computer Systems Architecture (CS 250P), Prof. Anton Burtsev — Fall 2019

> Designed and conducted novel in-class team contests for solving problems.
> Designed games in a way that simulates real-life agile software development, encourages active learning, and promotes learning that is fun and engaging.
> Prepared and conducted a quiz on compiler-based ILP; prepared workouts on caches, and virtual memory.
> Delivered and recorded lectures on pipelining and MIPS.

Operating Systems (CS 238P), Prof. Anton Burtsev — Spring 2019
> Delivered and recorded a lecture on paging and stack management.
> Held office hours to resolve students' issues in coding assignments on xv6 (a UNIX based OS by MIT PDOS).

Computer Systems Architecture (CS 250P), Prof. Anton Burtsev — Winter 2019
> Delivered and recorded lectures on CPU performance metrics, dynamic frequency and voltage scaling, pipelining, out of order execution, and caches.
> Prepared notes and solutions for computer architecture calculation problems.

Operating Systems (CS 238P), Prof. Anton Burtsev — Fall 2018
> Delivered and recorded lectures on OS concepts and the implementation of xv6.

B.S. Program, UCI

Concepts in Programming Languages (CS 141), Shannon Alfaro — Summer 2018
> Helped students understand PL concepts.
> Graded and proctored exams.

Principles of System Design (ICS 53), Prof. Ray Klefstad — Spring 2018
> Conducted weekly programming sessions, involving timed and live-graded activities, with around 80 students on coding problems.
> Covered problems related to algorithm design, UNIX programming, scripting, and sockets.
> Conducted fortnightly quiz sessions with 240+ students.

Compilers and Interpreters (CS 142), Prof. Harry Xu — Winter 2018
> Built sharable autograder for auto grading compiler projects.
> Prepared lecture slides and delivered lectures on parsing.

Concepts in Programming Languages (CS 141), Prof. Ray Klefstad — Fall 2017
> Helped students understand PL concepts and implement them in C, C++, Java.

Compilers and Interpreters (CS 142), Prof. Harry Xu — Winter 2017
> Guided 75+ students in implementing all phases of Crux Compiler in Java.
> Delivered a lecture on global optimization.
> Lead online class discussion group on Piazza.

Introduction to Programming (ICS 31), Prof. David Kay — Winter 2014
> Guided students on Python programming problems in lab sessions.

Requirements Analysis and Engg. (INF 113), Prof. Birgit Penzenstadler — Winter 2014
> Co-designed course framework, revised exam structure.
> Evaluated student presentations.

Course served as Reader:

Introduction to Software Engineering (INF 43), Prof. Hadar Ziv — Fall 2013
> Evaluated assignments on software engineering practices.

Selected Lectures

Operating Systems (CS 238P):
xv6 booting: Transitioning from 16 to 32 bit mode (video) — Fall 2018
ELF header, real mode segmentation, paging (video) — Fall 2018

	Threads, locks (video, code)	Fall 2018
	xv6 review, system call chain (video)	Fall 2018
	Compilers and Interpreters (CS 142):	
	Bottom-up parsing (LR(0), LR(1))	Winter 2018
	Top-down parsing (LL(1)), handles	Winter 2018
	Global optimization	Winter 2017
Study Material	*Operating Systems (CS 238P):*	
	Memory layout after booting xv6	Fall 2018
	Counting semaphores	Fall 2018
	Concepts in Programming Languages (CS 141):	
	Memory layout of struct and union in C	Fall 2017
Tools	*Compilers and Interpreters (CS 142):*	
	Crux Compiler Project Autograder	Winter 2018

Mentoring

Students	Jeonghoon Lee	Hanyang University, Seoul / Visiting I-SURF Fellow at UCI
	Jiwon Jeon	Ajou University, Suwon / Visiting I-SURF Fellow at UCI
	Minjun Cha	Kookmin University, Seouli (KMU) / Visiting I-SURF Fellow at UCI
	Yealynn Kim	KMU / Visiting I-SURF Fellow at UCI
	Sungsoo Son	KMU / Visiting I-SURF Fellow at UCI
	Hansem Jeon	KMU / Visiting I-SURF Fellow at UCI
	Soyeong Park	KMU / Visiting I-SURF Fellow at UCI
	John Vincent Thorpe	UCI / Undergraduate Student
	Md. Khaled Hussain	BUET / Graduate Student

Projects

Efficient Software Infrastructure for Non-Uniform Memory Machines (UCI) — 2018 - 2019
Jeonghoon Lee, Jiwon Jeon, Minjun Cha, Yealynn Kim

Graspan Migration from Java to C++ (UCI) — 2016
John Vincent Thorpe, Sungsoo Son, Hansem Jeon

Automatic Comment Generator for Java Code (UCI) — 2015
Soyeong Park

Improving Code Testing Environments (BUET) — 2012 - 2013
Md. Khaled Hussain

Service

OOPSLA '21 Chicago	Program Committee Member (Artifact Evaluation Committee) ACM Conference on Object-oriented Programming, Systems, Languages, and Applications
MUTATION '21 Porto de Galhinas	Web Chair 16th International Workshop on Mutation Analysis co-located with IEEE International Conference on Software Testing
ICS '19 Phoenix	Reviewer 33rd ACM International Conference on Supercomputing
JISYS '19	Reviewer Journal of Intelligent Systems

ISSTA '18 Amsterdam	Artifact Evaluation Committee Member ACM International Symposium on Software Testing and Analysis
ISSTA '17 Santa Barbara	Artifact Evaluation Committee Member ACM International Symposium on Software Testing and Analysis
UCI '17 Irvine	Prospective Graduate Student Visit Day Committee Member Department of Computer Science, University of California, Irvine
WADM '13 Dhaka	Reviewer Workshop on Advances in Data Management
BWTCSE '13 Dhaka	Organizing Committee Member Brain Storming Workshop on Theoretical Computer Science and Engineering
GDGA '13 Dhaka	Organizing Committee Member Workshop on Graph Drawing and Graph Algorithms
WALCOM '12 Dhaka	Organizing Committee Member and Reviewer Workshop on Algorithms and Computation

Organizations

ACM 2016-2018	Student Member Association of Computer Machinery, New York City, New York
IEEE 2016-2017	Student Member Institute of Electrical and Electronics Engineers, Piscataway, New Jersey
NCFDD 2015-present	Member National Center for Faculty Development and Diversity, Detroit, Michigan
AABEA 2016-present	Member American Association of Bangladeshi Engineers and Architects, Southern California Chapter
UAW 2865 2013-2018	Member Student Academic Workers Union at University of California, Berkeley
ISR 2013-2015	Member Institute of Software Research, University of California, Irvine
BCS 2013-present	Member Bangladesh Computer Society, Dhaka

Honors

Grants and Awards

Mar 2020	Presidential Fellowship - 2,000 USD per year for two years College of Natural Sciences and Mathematics University of Houston
Mar 2020	PhD Graduate Tuition Fellowship - 8,772 USD per year College of Natural Sciences and Mathematics University of Houston
Mar 2017	ACM Professional Activities Grant (Offered) For paper presentation in 22nd ACM International Conference on Architectural

	Support for Programming Languages and Operating Systems, (ASPLOS '17)
May 2016	ACM Travel Award For poster presentation in Student Research Competition at Programming Languages Design and Implementation Conference (PLDI '16)
Feb 2013	Chair's Award - 3,500 USD Department of Informatics, University of California, Irvine
Feb 2013	Tuition Award - 5,000 CAD (Offered) School of Computing Queen's University, Canada
Dec 2012	CodeCrafters-Investor Tools Research Grant For paper presentation in ACM Indian Software Engineering Conference (ISEC '13)
Sep 2010	Research Assistantship Grant Committee of Advanced Studies and Research, Bangladesh University of Engineering and Technology

Offers

Mar 2020	Teaching Assistantship - USD 18,000 per year College of Natural Sciences and Mathematics University of Houston
Apr 2020	PhD Admission Offer with Full Scholarship Faculty of Computer Science, Dalhousie University, Canada Dalhousie University, Canada
Aug 2019	Lecturer Position Offer Department of Computer Engineering and Computer Science California State University, Long Beach
Jun 2019	Lecturer Position Offer Department of Computer Science, College of Sciences San Diego State University
Apr 2013	Graduate Admission Offer Department of Computer Science, College of Engineering University of California, Davis
Feb 2013	PhD Admission Offer with Full Scholarship School of Computing, Queen's University, Canada
Jul 2009	Associate System Engineer Position Offer IBM-India

Teaching Certifications

Jul 2020	CIRTL Associate Level Certificate Center for the Integration of Research, Teaching, and Learning UCI Division of Teaching Excellence and Innovation University of California, Irvine
Jun 2020	Certificate of Teaching Excellence UCI Division of Teaching Excellence and Innovation University of California, Irvine

Technology Certifications

2020	IBM Course Certificates *IBM Developers Skills Network, IBM Cognitive Class, Coursera* Databases and SQL for Data Science Python for Data Science and AI Data Science Methodology Open Source Tools for Data Science

What is Data Science?

Technology Credentials

2020 — IBM Digital Credentials
IBM Developers Skills Network, IBM Cognitive Class, Coursera

- Databases and SQL for Data Science
- Python for Data Science and AI
- Data Science Methodology
- Open Source Tools for Data Science
- Data Science Orientation

Language Certifications

May 2008 — Diploma in French Language (Level A2)
Ministrè de l'Éducation Nationale, Republique Française
Alliance Française

Nov 2007 — Diploma in French Language (Level A1)
Ministrè de l'Éducation Nationale, Republique Française
Alliance Française

Proficiency Exams

Jul 2019 — Academic IELTS (Overall Band Score: 8.0)
International English Language Testing System
British Council, IDP Education, Cambridge Assessment English

Oct 2012 — TOEFL iBT (Score: 110 of 120)
Test of English as a Foreign Language, Internet-based Test
Educational Testing Service, Princeton, New Jersey

Others

Mar 2017 — Invited to present tutorial on Systemized Program Analyses:
A Big Data Perspective on Static Analysis Scalability at ASPLOS '17

Feb 2010 — Selection in National ICT Internship Program
Bangladesh Computer Council,
Ministry of Science and ICT, Dhaka, Bangladesh

Training

Forums, Seminars, Symposia

- ECOOP/ISSTA Summer School 2021, Online, July 2021
- Advances in Cryptography and Secure Hardware for Data Outsourcing, Tutorial Session, International Conference on Data Engineering (ICDE) 2020, The University of Texas at Dallas, April 2020
- Southern California Biomedical Imaging and Machine Learning Symposium, UCI Institute for Genomics and Bioinformatics, Irvine, California, October 2019
- Ethical and Engineering Challenges in IoT, Vint Cerf (Vice President and Chief Internet Evangelist, Google, CS Distinguished Seminar Series, Bren School of Information and Computer Sciences, UCI, April 2017
- Protecting Software as Intellectual Property: The Many Faces of Software Patents, Pamela Samuelson (Berkeley Law Professor), Dan Burk (UCI Law Professor), Allan Z. Litovsky (litigator, IP Attorney, partner at Stradling Yoccai), Prof. Nenad Medvidovic (USC), Panel Session, ISR Research Forum, Institute of Software Research, UCI, May 2014
- The Design of Everyday Things in the 21st Century, Don Norman (Vice President at Apple, Executive at HP, academic at Harvard, UC San Diego, Northwestern, KAIST), Informatics Seminar, UCI, April 2014

Selected Courses

Graduate courses at the Dept. of Informatics, University of California, Irvine

- Literature Review in Software Engineering, Prof. André van der Hoek, Prof. David Redmiles, Prof. Cristina Lopes, Prof. James A. Jones, 2014-2015
- Requirements Engineering and Specification, Prof. Debra J. Richardson, Winter 2015
- Information Retrieval, Prof. Cristina Lopes, Winter 2014
- Software Architecture, Prof. André van der Hoek, Fall 2013

Graduate course at the Dept. of Statistics, University of California, Irvine

- Statistical Methods for Data Analysis I, Prof. Jessica Utts, Fall 2013

Graduate courses at the Dept. of Computer Science and Engineering, Bangladesh Univ. of Engg. and Technology

- Graph Drawing, Prof. Md. Saidur Rahman, Spring 2010
- Data Mining, Prof. Md. Monirul Islam, Spring 2010
- Information System Management, Prof. Mohammad Mahfuzul Islam, Spring 2010
- Wireless Sensor Networks, Prof. Mahmuda Naznin, Spring 2010

General Workplace Training, University of California Learning Center

- UC Cyber Security Awareness Fundamentals, February 2020
- Safety Fundamentals, October 2019
- Ergonomics - Computer and Office, October 2019

Other Activities

- Contributed towards preparing a proposal by Robi Axiata Ltd. (Bangladesh's 2nd largest telecom operator owned by Axiata and Bharti Airtel Ltd.) for a nation-wide data analytics platform (funded by United Nations Development Program) for the Bangladesh government. Apr 2020
- Speaker at the National Entrepreneurship Network (a Wadhwani Foundation Community) inauguration event at the Institute of Engineering and Management, Kolkata, India. Feb 2008