

# AFTAB HUSSAIN

PhD Candidate

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## RESEARCH INTERESTS

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Programming Languages, Static Program Analysis Scalability, Security.

## EDUCATION

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- 2015 - present    PhD Candidate in COMPUTER SCIENCE,  
**University of California, Irvine**, United States  
Focus: "Programming Languages and Systems" | Advisor: Prof. Anton BURTSEV  
GPA: 3.80/4
- 2013 - 2015    M.Sc. in SOFTWARE ENGINEERING,  
**University of California, Irvine**, United States  
GPA: 3.74/4
- 2010 - 2012    M.Sc.Engg. in COMPUTER SCIENCE AND ENGINEERING,  
**Bangladesh University of Engineering and Technology**, Dhaka, Bangladesh  
Thesis: "Software Restructuring using Hierarchical Clustering"  
Advisor: Prof. Md. Saidur RAHMAN  
GPA: 3.83/4
- 2005 - 2009    B.Tech. in COMPUTER SCIENCE AND ENGINEERING,  
**Institute of Engineering and Management**, Kolkata, India  
Thesis: "Steganography" | Advisor: Prof. Himadri Nath SAHA  
GPA: 8.01/10

## EXPERIENCE

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### RESEARCH EXPERIENCE

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|------------------------------|---|
| MARCH 2015 to <i>present</i> | Graduate Researcher at DEPARTMENT OF COMPUTER SCIENCE, UNIVERSITY OF CALIFORNIA, IRVINE<br><i>Mars Systems Research Group, PLSys Group</i><br>Research Focus: Static program analysis, cyber security, graph processing<br>Key projects: <ul style="list-style-type: none"><li>• IDL generation for light-weight capability domains in Linux kernel</li><li>• Cloud vulnerabilities</li><li>• Graspan - Big data system for big code analytics</li><li>• Scaling path sensitive analysis and symbolic execution</li></ul> |
| SEPTEMBER 2013 to MARCH 2015 | Graduate Researcher at DEPARTMENT OF INFORMATICS, UNIVERSITY OF CALIFORNIA, IRVINE<br><i>Big Data Mondego Lab</i><br>Research Focus: Big data analytics, mining software repositories<br>Key projects: <ul style="list-style-type: none"><li>• StackOverflow code usability</li><li>• GitHub follow and watch relationship analysis</li></ul>   |

DECEMBER 2012 to AUGUST 2013	Research Associate at DEPARTMENT OF COMPUTER SCIENCE, BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY <i>Graph Drawing and Information Visualization Lab,</i> <i>Samsung Innovation Lab</i> Research Focus: Graph Clustering, Software Visualization
SEPTEMBER 2010 to JUNE 2011	Research Assistant at DEPARTMENT OF COMPUTER SCIENCE, BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY <i>Graph Drawing and Information Visualization Lab</i> Research Focus: Planar Graph Drawing, Wireless Sensor Networks

## TEACHING EXPERIENCE

	Teaching Assistant at BREN SCHOOL OF INFORMATION AND COMPUTER SCIENCES, UNIVERSITY OF CALIFORNIA, IRVINE
SUMMER 2018	<i>CS 141 - Concepts in Programming Languages</i>
SPRING 2018	<i>ICS 53 - Principles of System Design</i>
WINTER 2018	<i>CS 142 - Compilers and Interpreters</i>
FALL 2017	<i>CS 141 - Concepts in Programming Languages</i>
WINTER 2017	<i>CS 142 - Compilers and Interpreters</i>
WINTER 2014	<i>ICS 31 - Introduction to Programming</i>
WINTER 2014	<i>INF 113 - Requirements Analysis and Engineering</i>
	Reader at BREN SCHOOL OF INFORMATION AND COMPUTER SCIENCES, UNIVERSITY OF CALIFORNIA, IRVINE
FALL 2013	<i>INF 43 - Introduction to Software Engineering</i>

## INDUSTRY EXPERIENCE

MARCH 2010 to APRIL 2010	Software Engineering Intern at NEXTTEL COMMUNICATION, DHAKA, BANGLADESH
JULY 2008	Software Engineering Trainee at CMC KOLKATA, (A TATA ENTERPRISE), KOLKATA, INDIA

## PUBLICATIONS

### CONFERENCES

- C.4. K. Wang, A. Hussain, Z. Zuo, G. Xu, and A. A. 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. D. Yang, A. Hussain, and C. V. 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. I. Hossain, S. Sultana, A. Hussain, N. N. Moon, and M. S. Rahman. L-shaped drawings of series-parallel graphs. In *International Mathematics Conference*, Dhaka, Bangladesh, 2013 ([paper](#))
- C.1. A. Hussain and M. S. 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](#))

### WORKSHOPS

- W.2 A. 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 A. Hussain and M. S. 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

## POSTER PRESENTATIONS

- P.2 A. 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 ([poster](#))
- P.1 A. 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.5 H. Xu, Z. Zuo, K. Wang, A. Hussain, and K. Nguyen. Systemized program analyses: A big data perspective on scaling large-scale code analyses. Technical report, Department of Computer Science, University of California, Irvine, 2017 ([report](#))
- T.4 A. Hussain and I. Scherson. A study on memory consistency approaches in distributed shared memory systems. Technical report, Department of Computer Science, University of California, Irvine, 2016
- T.3 A. Hussain and G. Xu. Graphdtc: A graph processing system for scalable and precise program analysis. Technical report, Department of Computer Science, University of California, Irvine, 2015 ([report](#))
- T.2 A. Hussain, O. Asadi, and D. Richardson. A holistic look at requirements engineering practices in the gaming industry. Technical report, Department of Informatics, University of California, Irvine, 2015 ([report](#))
- T.1 D. Yang, A. Hussain, and C. V. Lopes. Effect of follow and watch relationships in pull requests (in github). Technical report, Department of Informatics, University of California, Irvine, 2014 ([report](#))

## UNDER PREPARATION

- U.2 A. Hussain and A. Burtsev. Common vulnerabilities and exposures in the cloud (under preparation). Technical report, Department of Computer Science, University of California, Irvine, 2018
- U.1 A. Hussain, V. Narayanan, and A. Burtsev. Dsa-idl-generator : Execution flow and indirect call handling (under preparation). Technical report, Department of Computer Science, University of California, Irvine, 2018

## SERVICE

ISSTA 2018 Amsterdam, Netherlands	Artifact Evaluation Committee Member INTERNATIONAL SYMPOSIUM ON SOFTWARE TESTING AND ANALYSIS
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ISSTA 2017 Santa Barbara, California, US	Artifact Evaluation Committee Member INTERNATIONAL SYMPOSIUM ON SOFTWARE TESTING AND ANALYSIS
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WADM 2013 Dhaka, Bangladesh	Reviewer WORKSHOP ON ADVANCES IN DATA MANAGEMENT
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BWTCSE 2013 Dhaka, Bangladesh	Organizing Committee Member BRAIN STORMING WORKSHOP ON THEORETICAL COMPUTER SCIENCE AND ENGINEERING
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GDGA 2013 Dhaka, Bangladesh	Organizing Committee Member WORKSHOP ON GRAPH DRAWING AND GRAPH ALGORITHMS
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WALCOM 2012 | Organizing Committee Member and Reviewer  
Dhaka, Bangladesh | WORKSHOP ON ALGORITHMS AND COMPUTATION

## STUDENTS MENTORED

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JUNE 2016 - DECEMBER 2016	<b>John Vincent Thorpe</b> Undergraduate Student DEPARTMENT OF COMPUTER SCIENCE, UNIVERSITY OF CALIFORNIA, IRVINE
JUNE 2016 - DECEMBER 2016	<b>Sungsoo Son</b> Undergraduate I-Surf Fellow FROM KOOKMIN UNIVERSITY, SEOUL DEPARTMENT OF COMPUTER SCIENCE, UNIVERSITY OF CALIFORNIA, IRVINE
JUNE 2016 - AUGUST 2016	<b>Hansem Jeon</b> Undergraduate I-Surf Fellow FROM KOOKMIN UNIVERSITY, SEOUL DEPARTMENT OF COMPUTER SCIENCE, UNIVERSITY OF CALIFORNIA, IRVINE
SEPTEMBER 2015 - DECEMBER 2015	<b>Soyeong Park</b> Undergraduate I-Surf Fellow FROM KOOKMIN UNIVERSITY, SEOUL DEPARTMENT OF COMPUTER SCIENCE, UNIVERSITY OF CALIFORNIA, IRVINE
SEPTEMBER 2015 - DECEMBER 2015	<b>Md. Khaled Hussain</b> Graduate Student DEPARTMENT OF COMPUTER SCIENCE, BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY