

# Syed Islam

## Profile and Career Objective

A committed, motivated and hard-working academic with experience in cutting edge research. I have proven ability in clearly and effectively communicating and presenting lengthy technical or non-technical content to a wide variety of audience. I am able to pick up new skills and blend into the framework of an organisation with great ease. I am also very keen on research and development of new ideas and techniques to solve real-world problems. In future, I would like to establish myself as a leading academic and researcher in the field of software engineering with strong links and ties to the industry.

## PhD Supervision

I currently supervising the following PhD candidates:

**Mrs Rasha Hafidh** - Developing an Ontology-Driven Careflow Management System to Support the Process of Homecare for Elderly People with Chronic Diseases.

**Mr Isibor Ihianle** - A Knowledge Driven Activity Recognition Framework Enhanced Using Topic Model.

**Mr Umar Ismail** - Cloud Security Audit And Transparency Framework For Building Enterprise Trust.

**Mr Kingsley Okoye** - A Semantic Rule-Based Approach Supported by Process Mining for Personalised Adaptive Learning.

**Mr Mahin Talukder** - Effective Software Protection.

**Mr Eoin Woods** - Aligning and Integrating Software Architecture Practice and Representation with Software Implementation.

**Mr Pusp Joshi** - A Cloud Based G2G electronic government framework from the perspectives of Nepal.

**Mr Charles Obi** - Assessing security risk for the migration of legacy systems into Cloud in SME's.

**Mr Hassan Kassir** - Evolution of Software Architecture Sociology.

## PhD Examination

I have been an examiner for the following PhD candidates:

**Dr Nigar Jebraeili** - Ease: Energy Aware Software Engineering.

**Dr Ahmed Alzahrani** - Enhanced learning of computer programming in university through collaboration using multi-touch tools.

## Employment

- Aug '15 **Lecturer in Computer Science & Informatics**, *University of East London*, London, UK.
- To date - I am currently a Lecturer at the Department of computer science & Informatics at the University of East London. In my current position, I am involved in teaching, research, administration and professional activities. I am the module leader of several undergraduate modules where I am responsible for teaching and administration. Additionally, I also support the teaching activities of several other modules within the department. I am also the coordinator for undergraduate projects and MSc. Dissertation module. Since being at UEL I have also delivered lectures at partner institutions in China for two weeks. I am also the Programme Leader for the flagship MSc Computer Science programme.
- Apart from my teaching activities, I am also heavily involved in research. I am part of the Enterprise Computing Research Group at UEL, where I am continuing my research in software engineering related areas and expanding to other areas such as energy measurement. I am fully committed and working towards an academic portfolio of REF-able publications and winning grants to provide ongoing support for research activities.
- I also dedicate a portion of my time to overseeing and leading the development team at CHIME, UCL as part of research collaboration to ensure that I am contributing to cross-disciplinary research activities and that I am apprised of current trends and practices in software development.
- Jan '15 **Research Associate**, *University College London*, London, UK.
- Jul '15 - I worked as a research associate at the Centre for Health Informatics & Multiprofessional Education (CHIME). My position was jointly funded by EU and industrial partners of the institute. In my position, I led the software development effort in capturing and dissemination of physiological and anatomical knowledge from clinicians and physiology experts. I worked closely with these experts and the industry to identify their requirements and develop tools and environment to support this knowledge capture process. My research entailed areas of software visualisation and big data. In my role, I was also responsible for managing the SCRUM activity of the team and act as the lead on the front-end development using modern web development technologies.
- Sep '12 **Research Associate**, *University College London*, London, UK.
- Dec '14 - I worked as a research associate at the Centre for Research on Evolution Search and Testing (CREST) under the Software Systems Engineering Group. The position was funded through the EU - FITTEST project where I worked with other EU partners on various aspects of fault prediction and testing of Internet systems. I have also been part of multiple research grant proposals to EPSRC, EU and other funding bodies. I was also routinely involved in peer-review of technical papers submitted to international conferences and Journals. At the centre, I also held the position of the deputy manager for Crest Open Workshops (COW) and was heavily involved in organisation and running of the workshops. I also had teaching responsibilities in the form of tutorials and labs in post graduate courses: Algorithms and Tools & Environment.
- Oct '11 **Integration Engineer**, *Intercontinental Exchange (ICE Link)*, London, UK.
- Aug '12 - I worked with ICE Link's clients in developing bespoke interfaces to the ICE Link platform. I was also responsible for developing interfaces from ICE Link to third-party service providers and vendor applications. Other than technical development that involves use of Java, SQL, XML, FPML and scripting, I was also responsible for development of reference documentation and educating technical users with use of ICE Link API and software systems.
- Sep '10 **Lecturer**, *Stamford College*, London, UK.
- Jun '11 - I taught several modules of the certificate, diploma and professional graduate diploma courses of the BCS program. Modules covered areas of programming, distributed systems and computing. This also included project supervision at both diploma and professional graduate diploma levels. Adminstrating was also part of the role.
- Sep '09 **Teaching Assistant / Lead Lab Demonstrator**, *King's College London*, London.
- Jun '10 - I was responsible for preparing lab/tutorial problems and solutions for undergraduates taking programming courses, helping the lecturer with course material preparation, assessment and other administrative tasks. I was also the lead lab demonstrator for the undergraduate programming labs.
- Sep '07 **Lecturer**, *BRAC University*, Dhaka, Bangladesh.
- Mar '09 - I am currently on study leave from my position as a lecturer at the School of Engineering and Computer Science, where I taught courses in Microprocessors, Operating system, Networks and Programming languages. Apart from teaching, I was also responsible for resource allocation and was member of various committees of the university, such as, student admission, staff recruitment, exam board, disciplinary board and IT committee.

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## Education

- Sep '09 **PhD. Advanced Computing Research**, *University College London (UCL)*, London.  
- I am a member of the Software Systems Engineering group at UCL. My thesis is titled "Coherent  
Mar '14 Dependence Clusters". My research incorporates areas of static & dynamic program analysis, software  
clustering, software visualization, system evolution and fault prediction. I am supervised by Dr. Jens Krinke  
and Prof. Mark Harman.
- Sep '06 **MSc. Advanced Software Engineering**, *King's College London (KCL)*, London.  
- Awarded Distinction (Average 80%)
- Sep '07 Awarded 92% for thesis on 'Global Variables and Dependence Clusters', supervised by Prof. Mark Harman.
- Sep '03 **BSc. Computer Science and Computer Networking**, *London Metropolitan University*, Lon-  
don, UK.  
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Jul '06 Awarded First Class Honours [1.1] (Average 85%)  
Awarded highest marks on several modules, such as, programming, networking, embedded systems, etc.

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## Professional Qualifications

- May '16 **Postgraduate Certificate in Learning & Teaching at HE**, *University of East London*, London,  
UK.
- Apr '10 **Graduate Certificate in Academic Practices (GCAP)**, *King's College London*, London, UK.
- Jun '06 **Cisco Certified Networking Associate (CCNA)**, *London Metropolitan University*, London,  
UK.

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## Administrative Roles/Responsibilities

- Sep '16 **Programme Leader**, *MSc Computer Science*, University of East London.  
- I am the programme leader for MSc Computer Science, which is the flagship postgraduate programme  
To Date offered at the department. I was responsible for creating the programme specification, starting from  
market analysis, creating validation documentation, ensuring validation of the programme by both internal  
and external committees, recruitment and now managing the running and administration of the entire  
programme.
- Sep '15 **MSc. Dissertation Coordinator**, *MSc. Dissertation*, University of East London.  
- I am the module leader/coordinator for the MSc. Dissertation module at the Department of Computer  
To Date Science & Informatics at the University of East London. The module is taken by students from five different  
MSc. programmes offered by the department. I am responsible for the administration of the module and  
all the coordination effort, including accepting registration on the module, allocating supervisors, ensuring  
supervision structure, arranging final submission process, arranging viva process and final mark entry for  
the module.
- Feb '17 **Member**, *School Research Degree Subcommittee*, ACE, University of East London.  
- I am a member of the school subcommittee which is responsible for the strategic research directions and  
To Date planning for the School of Architecture, Computing and Engineering.
- Sep '10 **Deputy Manager**, *Crest Open Workshop*, University College London.  
- The CREST Open Workshop programme consists of a series of informal monthly workshops with the  
Current aim of bringing together researchers and practitioners working on a topic with a focus on discussion and  
interaction and with no formal proceedings. Thus far we have had 1149 registrations, 548 unique attendees  
from 218 institutions in 42 different countries.
- Feb '09 **Study Tour Leader**, *Submarine cable station & Weather stations*, Brac University.  
- I was responsible for overseeing the organisation of a 2 day trip of 80 students to a city in Bangladesh  
Feb '09 which hosts the Submarine Cable Station (Internet Connectivity) and Weather Station.
- Dec '08 **Event Organiser**, *World Cyber Games*, Brac University.  
- I was responsible for overseeing the organisation and hosting of the World Cyber Games 2008 at Brac  
Dec '08 University, Dhaka Bangladesh.
- Apr '08 **Coach**, *Cisco National Competition*, Brac University.  
- I coached a student team from the university who took part in the national Cisco competition to win the  
Jun '08 2nd position.

- Sep '07 **Resource Allocator**, *Department of Computer Science*, Brac University.
- I was responsible for scheduling of the Computer Science courses and assignment of lecturers and setting of exam dates to ensure that the demands from students were met by efficient allocation of resources. I also had to liaise with the central timetable allocators to ensure availability of shared room and lab resources.
- 'Mar 09
- Sep '07 **Faculty Advisor**, Brac University Computer Club.
- I was the faculty advisor for the Brac University Computer Club. I helped with logistical and departmental support for many activities run by the club such as: training courses, field trips and career events. I also had to organize General Body Meeting and oversee the election of executive committee etc.
- 'Mar 09
- Sep '07 **Committee Member**, *Department of Computer Science*, Brac University.
- I served on several committees and boards at the department and at the broader University level. I was on the student recruitment, faculty recruitment, disciplinary, Information Technology and university event organisation boards.

## Research Interests

**Dependence Clusters** - A dependence cluster is a maximal set of program statements that are mutually inter-dependent. My research has focused on quantitative analysis to show the existence of these clusters in production source code and qualitative study of the underlying reason for their formation. My research has introduced coherent dependence clusters, a specialised form of dependence clusters. These clusters have been shown to map directly to program structure, which can aid in program comprehension and understanding, as well as, identifying structural defects in code.

**Software Visualisation** - As part of my research on clusters, I have also developed a multi-level visualization tool (deCluVi) for mapping software metrics to program statements using colour and dimension. The visualization is created from System Dependence Graphs and static backward/forward slices extracted from an industry standard static analysis tool called CodeSurfer. The dataset and the tool have been made freely available to other researchers. My recent work involves modelling of the multi-scale human physiology to web-based visualisation tools to support researchers and clinicians.

**Program Slicing** - Current program slicing techniques cannot handle systems written in multiple programming languages. Observation-based slicing (ORBS) is a novel language-independent slicing technique capable of slicing multi-language systems including systems which contain (third party) binary components. A potential slice obtained through repeated statement deletion is validated by observing the behaviour of the program: if the slice and original program behave the same under the slicing criterion, the deletion is accepted. We have developed ORBS to take advantage of the existing build tool chains to achieve observation-based slicing. I have also created a parallel version of ORBS to reduce slicing times and make the entire process usable in practice.

**SBSE** - I am also interested in search-based software engineering, its application to fault prediction and feature/concept location. At present, I am also working on search-based techniques to automatically predict bugs and also for automatic bug assignment to developers.

## Recent Teaching Experience

- Jan '16 **MSc Dissertation**, *Module leader, Lectures & Supervision*, University of East London.
- present
    - o Core module for all postgraduate programmes within the department
    - o Delivered lectures in research methods
    - o I supervise approximately 4 PG project students each year.
    - o Manage and administer the module from updating module specification, contents to marking and presenting the marks at the board. The module runs three times a year.
- Jan '16 **UG Research Projects**, *Module Leader, Lectures & Supervision*, University of East London.
- present
    - o Core module for final year undergraduates taken by approximately 80 students
    - o Delivered lectures in research methods, literature review, plagiarism, legal & ethical issues and project management.
    - o I supervise approximately 6 UG project students each year.

- Sep '15 **Advanced Programming, Module Leader, Lectures & Labs**, University of East London.
- Advanced and distributed programming in Java to second and third year undergraduates
- present
- o I teach all the lectures for the module and one of tutorial groups.
  - o Approximately 80 students in lectures and 25 in labs.
  - o Manage and administer the module from updating module specification, contents to marking and presenting the marks at the board.
- Jan '16 **Introduction of Computer Systems and Network, Lectures**, University of East London.
- Core module for first year undergraduates taken by approximately 140 students
- Apr '16
- o Provides introduction to computing and networks.
- Jan '16 **Computing in Practice, Tutorials**, University of East London.
- Optional module for second year undergraduates
- Apr '16
- o Tutorial group had approximately 25 students
  - o Taught, ethical issues, legal issues and application of computing in practical scenarios.
- Sep '15 **Introduction to Software Development, Lectures & Labs**, University of East London.
- Year long introduction to programming in Java to first year undergraduates
- Apr '16
- o Approximately 120 students in lectures and 25 in labs.
  - o Also delivered the module in China, HDU (partner institution)
- Sep '15 **Advanced Software Engineering, Lectures, Tutorials, & Labs**, University of East London.
- Taught as a core module for MSc. in Advanced Software Engineering
- Dec '15
- o Taught theoretical and practical components in search-based software engineering, software development, software testing and tool & environments.
- Sep '12 **Algorithmic, Tutor**, University College London.
- This is a masters courses taken by around 40 students
- Dec '13
- o Taught 1 hours of tutorial sessions each week for 6 weeks.
  - o developing tutorials, coursework grading
- Sep '12 **Tools and Environments, Labs**, University College London.
- This is a masters courses taken by around 50 students
- Dec '13
- o Taught 1 hour of practical lab each week for 12 weeks
  - o practical labs, developing lab sheets, assignment grading.

## Key Capabilities

<i>Teaching and Research</i>	Having done research projects with leading individuals of software engineering field, I am well aware of the attributes related to research, methodologies, and, analysis and evaluation techniques. Having taught as a lecturer at reputed university and colleges I have also won several commendations for achieving outstanding teaching evaluations.
<i>Communication and Interpersonal</i>	Working at various institutions with diverse background and culture has taught me the skills needed to interact with people from various disciplines and multi-cultural backgrounds. I am able to engage with people from different backgrounds and technical expertise with great ease.
<i>Organisational and Time Management</i>	Doing part-time jobs alongside full-time education has made me appreciate the importance of good organisational and time management skill. I also have exceptional multi-tasking ability that helps me cope with the commitments of my professional, academic and personal life.
<i>Problem Solving and Analytical</i>	Pursuing graduate degrees consisting of networking, programming, systems design, algorithms and mathematics has vastly improved my problem solving, logical thinking and analytical skills to the point that I can analyse problems in depth taking into account minute and relevant details. Studying for a PhD has contributed further to my critical thinking and evaluation abilities, which have been further enhanced by my post-doctoral experience.
<i>Teamwork and Leadership</i>	I have led teams in organising many events while I served as the faculty advisor to the Computer Club at BRAC University. These involved various contests, workshops, seminars, study tours and cultural events. I have also worked as part of team in my development roles. I am also responsible for organisation and operation of the Crest Open Workshop (COW) at UCL.

## Awards and Achievements

- In Sep '17, our paper on Tree-Oriented vs. Line-Oriented Observation-Based Slicing at the International Working Conference on Source Code Analysis and Manipulation was given the best paper award.
- In Sep '17, I won the UEL Teaching and Learning Awards for Curriculum Innovation worth £1,000 as a team with Dr Usman Naeem.
- In Apr '16, I received funding under the UEL Internship Program to hire a summer intern to work under my supervision on one of my research projects.
- In Mar '16, I received Microsoft Azure Grant (\$20,000) for research into improving the techniques for energy measurement of cloud software.
- In May '14, I received Microsoft Azure Grant (\$40,000) for research into improving current program slicing techniques and deployment of parallel-ORBS to the cloud infrastructure.
- Awarded grant from Overseas Research Student Award Scheme and Graduate Scholarships to undertake fully funded PhD at King's College London. This was later transferred to University College London.
- Highest teaching evaluation marks from student surveys 2008, department of computer science, Brac University.
- £6000 Scholarship awarded by King's College London, during MSc.
- Highest Overall Mark, Computer Science Graduate 05/06, London Metropolitan University.
- Best Overall Mark, Extended Degree 05/06, London Metropolitan University.
- Multiple Merit Scholarships of £2000 each for outstanding performance during BSc.

## Recent Publications

Dave Binkley, Nicolas Gold, Mark Harman, Syed Islam, Jens Krinke and Shin Yoo: Tree-Oriented vs. Line-Oriented Observation-Based Slicing. International Working Conference on Source Code Analysis and Manipulation, September 2017. – **Best Paper Award.**

Joseph Doyle, Syed Islam, Rabih Bashroush and Donal O'Mahony: Cloud Strife: Expanding the Horizons of Cloud Gaming Services. IEEE Services 2017 Research Track June 2017.

Kingsley Okoye, Abdel-Rahman Tawil, Usman Naeem, Syed Islam and Elyes Lamine: Using Semantic-based Approach to Manage Perspectives of Process Mining: Application on Improving Learning Process Domain Data. IEEE International Conference on Big Data (Big Data), December 2016.

Kingsley Okoye, Abdel-Rahman Tawil, Usman Naeem, Syed Islam and Elyes Lamine: Semantic-based Model Analysis towards Enhancing Information Values of Process Mining: Case Study of Learning Process Domain. International Conference on Soft Computing and Pattern Recognition, Vellore, India, December 2016.

Yibiao Yang, Mark Harman, Jens Krinke, Syed Islam, David Binkley, Yuming Zhou, Baowen Xu: An Empirical Study on Dependence Clusters for Effort-Aware Fault-Proneness Prediction. International Conference on Automated Software Engineering, Singapore, September 2016.

Umar Ismail, Syed Islam, Shareeful Islam: Towards Cloud Security Monitoring: A Case Study. Cybersecurity and Cyberforensics Conference, Jordan, August 2016.

Bernard de Bono, Michiel Helvensteijn, Natallia Kokash, Irene Martorelli, Dewan Sarwar, Syed Islam, Pierre Grenon, S. Randall Thomas, Peter Hunter: ApiNATOMY: Physiology knowledge integration over circuitboards of functional anatomy. Virtual Physiological Human Conference (VPH), Amsterdam, Netherlands, September 2016.

Adel Noureddine, Syed Islam and Rabih Bashroush: Jolinar: Analysing the energy footprint of Software Applications. International Symposium on Software Testing and Analysis (ISSTA), Saarland, Germany, July 2016.

Syed Islam, Adel Noureddine and Rabih Bashroush: Measuring Energy Footprint of Software Features. IEEE International Conference on Program Comprehension (ICPC), Austin, USA, May 2016.



Syed Islam and David Binkley: PORBS– A Parallel Observation-based Slicer. IEEE International Conference on Program Comprehension (ICPC), Austin, USA, May 2016.

B. de Bono, M. Helvensteijn, N. Kokash, I. Martorelli, D. Sarwar, S. Islam, P. Grenon and P. Hunter: Requirements for the formal representation of pathophysiology mechanisms by clinicians. In *Interface Focus*, 6(2), p.20150099, 2016.

D. Binkley, A Beszedes, S. Islam, J Jasz and B Vancsics: Uncovering Dependence Clusters and Linchpin Functions. In *International Conference on Software Maintenance and Evolution*, Bremen, Germany, 2015.

D. Binkley, Nicolas Gold, Mark Harman, Syed Islam, Jens Krinke and Shin Yoo: ORBS and the Limits of Static Slicing. In *International Working Conference on Source Code Analysis and Manipulation*, Bremen, Germany, 2015.

D. Binkley, N. Gold, M. Harman, S. Islam, J. Krinke and S. Yoo. ORBS: Language independent program slicing. In *Foundations of Software Engineering*, Hong Kong, 2014.

M. Harman, S. Islam, Y. Jia, L. Miku, F. Sarro and K. Srivisut. Less is more: Temporal fault predictive performance over multiple Hadoop releases. In *Symposium on Search-Based Software Engineering*, Brazil, August 2014.

S. Islam, J. Krinke, D. Binkley and M. Harman: Coherent dependence clusters in source code. *Journal of Systems and Software*, 88(0):1–24, 2014

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## References

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