SK ALAMGIR HOSSAIN

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Bangladesh   URL: www.alamgirhossain.com

EDUCATION

- **PhD. in Computer Science & Engineering**   Khulna University
  Khulna University   *July 2016 - Ongoing*
  - Thesis: Internet of Things based Framework for Situation Awareness in a Smart City
  - Advised by: Prof. Dr. Md. Anisur Rahman.

- **M.Sc. in Computer Science**   Ottawa, ON, Canada
  University of Ottawa   *October 2011*
  - GPA: 9.6 out of 10
  - Thesis: Design and development of a framework to bridge the gap between real and virtual.
  - Advised by: Prof. Dr.-Ing. Abdulmotaleb El Saddik.

- **B.Sc. in Computer Science & Engineering**   Khulna, Bangladesh
  Khulna University   *May 2006*
  - GPA: 3.89 out of 4, and Dean's Honour List each year
  - Thesis: Efficient digital image watermarking technique based on discrete cosine transform and discrete wavelet transform.
  - Advised by: Prof. Dr. Rameswar Debnath.

PROFESSIONAL CERTIFICATION

- **Microsoft Certified Technology Specialist (MCTS)**   *July 2008*
  Microsoft .NET Framework - Application Development Foundation
  - Online Transcript: https://mcp.microsoft.com/authenticate/ValidateMCP.aspx
  - Transcript Id: 802356, Access code: hiramcpd

ACADEMIC AND RESEARCH AWARDS

PhD Fellowship, ICT Division, Bangladesh) ($25,000) . . . . 2016 - 2019

Ontario Graduate Scholarship (OGS for international students) ($35,000) . . . . 2010 - 2011

Excellence Scholarship, University of Ottawa ($15,000) . . . . 2010 - 2011

Research Assistantship, University of Ottawa, ($25,000) . . . . 2010 - 2012

RESEARCH INTERESTS

The Internet of Things (IoT), Human-Computer Interaction (HCI), Virtual reality with Haptic, Tangible Computing, Ambient Intelligence and Humanized Computing, Smart Environment and Telesurveillance System

Awards & Achievements

2016	ICT Division, Bangladesh, PhD Fellowship (2016-2019)
2011	University of Ottawa, Excellence Scholarship (2010-2011)
	Ontario Graduate Scholarship (for international students) (2010-2011)
	Best Web Designer in *MCRLab web application design competition*
2008	Microsoft Certificate of Excellence Award, completed the *MCTS* exam with 97% marks
2007	Received Best Finish Award, *Pyxisnet 3D Game Coding Competition*, Dhaka, Bangladesh
2006	Second rank with Distinction in B.Sc. in Computer Science & Engineering, Khulna University, Bangladesh
	Awarded **1st** according to the visitors votes at BRAC Bank IT FAIR
2005	**1st** position in the *Southern Regional Programming Contest 2005*
	14th position in the *ACM Int. Collegiate Programming Contest* Dhaka Site
2004	**3rd** Position in *Khulna University Programming Contest*, 2004
	35th position in the *ACM Int. Collegiate Programming Contest* Dhaka Site
2002-06	Solutions to over 500 problems accepted at UVA Online Judge
	Topcoder rated member
	Education Board Scholarship/Dean's List in the year 2003, 04, 05, 06

Working Experience

Associate Professor — Khulna, Bangladesh
Computer Science and Engineering Discipline, Khulna University — *Sep 2015 - Continue*
- Demonstrated in depth knowledge of theoretical computer science.
- Significant achievement as a programming contest coordinator.

Assistant Professor — Khulna, Bangladesh
Computer Science and Engineering Discipline, Khulna University — *Sep 2011 - Sept 2015*
- Demonstrated in depth knowledge of theoretical computer science.
- Significant achievement as a programming contest coordinator.

Research Assistant — Ottawa, ON, Canada
Discover Lab, University of Ottawa (www.discover.uottawa.ca) — *Jan 2010 - Sep 2011*
- Developed haptic based real and virtual collaborative tool.
- Demonstrated high quality research and publications.

Webmaster — Ottawa, ON, Canada
Faculty of Arts, University of Ottawa. — *Nov 2010 - Sep 2011*
- Provided easy manageable, graphical organization chart for University of Ottawa.
- Designed & developed *research project management* and *asset management software* .

Teaching Assistant — Ottawa, ON, Canada
Faculty of Engineering, University of Ottawa — *Sept 2010 - Aug 2011*
- Marked assignments, examinations, and taught courses. Conducted the lab sessions.

Lecturer — Khulna, Bangladesh
Computer Science and Engineering Discipline, Khulna University — *Sep 2008 - Dec 2009*
- Demonstrated in depth knowledge of theoretical computer science.
- Significant achievement as a programming contest coordinator.

- **Software Engineer**   Dhaka, Bangladesh
  The Jaxara IT Ltd (www.jaxara.com)   *Jan 2008 - Sep 2008*
  - Demonstrated to work in Scrum project management framework.
  - Successfully lead a project called *ASLA LACES*.

- **Software Engineer**   Dhaka, Bangladesh
  Pyxisnet Ltd   *Apr 2007 - Dec 2007*
  - Successfully implemented messaging module in web-based collaborative tool and improved the data archiving method.

- **Summer Intern**   Dhaka, Bangladesh
  Pacific Bangladesh Telecom Ltd (Citycell)   *Dec 2005 - Feb 2006*
  - Successfully developed automatic optical character recognition based subscriber entry management system.
  - Redesigned the company's IT reporting by using Crystal Report and Belarc PC tools.

TEACHING EXPERIENCE

- **Human Computer Interaction**   Khulna University
  Instructor   *2012, 2013, 2014, 2020*
  - Delivered lectures, marked assignments and exams.

- **Computer Networks**   Khulna University
  Instructor   *2008, 2009, 2020*
  - Taught the course, supervised labs, marked assignments and exams.

- **Software Engineering**   Khulna University
  Instructor   *2015, 2019*
  - Delivered lectures, marked class test and exams.

- **Object Oriented Programming**   Khulna University
  Instructor   *2012, 2013, 2014*
  - Delivered lectures, marked class works and exams.
  - Conducted the lab sessions.

- **Artificial Intelligence**   Khulna University
  Instructor   *2009, 2015*
  - Delivered lectures, supervised labs, marked assignments and exams.

- **WWW Structures, Techniques and Standards**   University of Ottawa
  Teaching Assistant   *Summer 2011*
  - Marked assignments, examinations, and taught the course.
  - Conducted the lab sessions.

- **Professional Practice in Computer Science**   University of Ottawa
  Teaching Assistant   *Winter 2010*
  - Prepared and marked assignments. Conduct the student group discussion sessions.

CONTRIBUTIONS TO RESEARCH AND DEVELOPMENT

a. Book Chapters

[1] A. Rahman, **SA. Hossain**, and A. El Saddik. Haptic Interaction and Avatar Animation Rendering Centric Telepresence in Second Life. *Multimedia Image and Video Processing (2nd edition)*, March 2012 by CRC Press, pp. 717-739, ISBN: 978-1-4398-3086-4.

b. Articles published or accepted in refereed journals

[1] MA. Hossain, R Ferdousi, **SA. Hossain**, MF. Alhamid, and A. El Saddik. (2020). A Novel Framework for Recommending Data Mining Algorithm in Dynamic IoT Environment. **IEEE Access** 8, 157333-157345.

[2] T. Tabassum, **SA. Hossain**, MA. Rahman, MF. Alhamid and MA. Hossain. (2020). An Efficient Key Management Technique for the Internet of Things. **Sensors** 20 (7), 2049.

[3] **SA. Hossain**, M. Anisur Rahman, and M. Anwar Hossain. (2018). Edge Computing Framework for Enabling Situation Awareness in IoT based Smart City. **Journal of Parallel and Distributed Computing**, 122 (2018): 226-237.

[4] M. Anwar Hossain, Atif Alamri, Ahmad S. Almogren, **SA. Hossain**, and Jorge Parra. (2014). A Framework for a Context-Aware Elderly Entertainment Support System. **Sensors** 2014, 14(6), 10538-10561.

[5] M. Shamim Hossain, **SA. Hossain**, AM. Alamri, and A. El Saddik. Ant-based service selection framework in smart home monitoring environment. To be published in *Multimedia Tools and Applications (MTAP)* (accepted).

[6] **SA. Hossain**, A. Rahman, and A. El Saddik, Measurements of Multi-modal Approach to Haptic Interaction in Second Life Inter-personal Communication System. In *IEEE Transactions on Instrumentation & Measurement*, vol.60, no.11, pp.3547-3558, Nov. 2011.

c. International conference papers

[1] **SA. Hossain**, M. Anisur Rahman, and M. Anwar Hossain. Detecting Situations from Heterogeneous Internet of Things Data in Smart City Context. *Science and Information Conference. Springer*, July 2018, London, UK.

[2] T. Tabassum, **SA. Hossain**, and M. Anisur Rahman. A Secure Key Management Technique through Distributed Middleware for the Internet of Things. *Science and Information Conference. Springer*, July 2018, London, UK.

[3] MNA Hossain, A Pal and **SA. Hossain**. A Wearable Sensor Based Elderly Home Care System in a Smart Environment. *Proceedings of ICCIT 2015 - the 18th International Conference on Computer and Information Technology*, Dhaka, Bangladesh. Dec 2015.

[4] T. Tasneem, A. Shome and **SA. Hossain**. A Gamming Approach In Physical Therapy for Facial Nerve Paralysis Patient. *Proceedings of ICCIT 2013 - the 16th International Conference on Computer and Information Technology*, Khulna, Bangladesh. Dec 2013.

[5] **SA. Hossain**, T. Tabassum DBF-MLT: NP-Completeness of Specialized Voice Service in Networked Virtual Environment a Peer-to-Peer Approach. *Proceedings of ICCIT 2013 - the 16th International Conference on Computer and Information Technology*, Khulna, Bangladesh. Dec 2013.

[6] **SA. Hossain**, T. Tabassum Neural net based complete character recognition scheme for Bangla printed text books. *Proceedings of ICCIT 2013 - the 16th International Conference on Computer and Information Technology*, Khulna, Bangladesh. Dec 2013.

[7] MAA Ahasan, **SA. Hossain**, and AU Siddiquee. (2012). Obstacles invariant navigation of An Autonomous Robot based on GPS. *Proceedings of ICCIT 2012 - the 15th International Conference on Computer and Information Technology*,Chittagong, Bangladesh, Dec. 2012.

[8] AMohmmad Ullah, MR Islam, SF Aktar, **SA. Hossain**. (2012). Remote-Touch: Augmented reality based marker tracking for Smart Home control. *Proceedings of ICCIT 2012 - the 15th International Conference on Computer and Information Technology*,Chittagong, Bangladesh, Dec. 2012.

[9] **SA. Hossain**, A. Rahman, and A. El Saddik. Bringing Virtual Events into Real Life in Second Life Home Automation System. *Proceedings of VECIMS 2011 - the IEEE Conference on Virtual Environments, Human-Computer Interfaces and Measurement Systems*, Ottawa, Canada, Sept 2011.

[10] **SA. Hossain**, A. Rahman, and A. El Saddik. Fusion of Face Networks through the Surveillance of Public Spaces to address Sociological Security Recommendations. *Proceedings of ICME 2011 - the IEEE Conference on Multimedia & Expo*, pp.1-6, Barcelona, Spain, July 2011.

[11] **SA. Hossain**, A. Rahman, and A. El Saddik. Interpersonal haptic communication in second life. *Proceedings of HAVE 2010 - the 9th IEEE International Symposium on Haptic Audio Visual Environments and Games*, pp.1-4, Arizona, USA, Oct 2010.

[12] A. Rahman, **SA. Hossain**, and A. El Saddik. Bridging the Gap between Virtual and Real World by Bringing an Interpersonal Haptic Communication System in Second Life. *Proceedings of ISM 2010 - the IEEE International Symposium on Multimedia*, pp. 228-235, Taichung, Taiwan, Dec 2010.

[13] **SA. Hossain**, A. Rahman, T. Tran, and A. El Saddik. Location aware question answering based product searching in mobile handheld devices. *Proceedings of DS-RT 2010 - the 14th IEEE/ACM International Symposium on Distributed Simulation and Real Time Applications*, pp.189-195, Fairfax, Virginia, USA, Oct 2010.

[14] A. Rahman, T. Tran, **SA. Hossain**, and A. El Saddik. Augmented rendering of makeup features in a smart interactive mirror system for decision support in cosmetic products selection. *Proceedings of DS-RT 2010 - the 14th IEEE/ACM International Symposium on Distributed Simulation and Real Time Applications*, pp. 203-206, Fairfax, Virginia, USA, Oct 2010.

[15] **SA. Hossain**, A. Rahman, and A. El Saddik. Haptic based emotional communication system in second life. *Proceedings of HAVE 2010 - the 9th IEEE International Symposium on Haptic Audio Visual Environments and Games*. Demo, pp.1-1, Arizona, USA, Oct 2010.

[16] SMM. Islam, R. Debnath, and **SA. Hossain**. DWT based digital watermarking technique and its robustness on image rotation, scaling, jpeg compression, cropping and multiple watermarking. *Proceedings of ICICT 2007 - International Conference on Information and Communication Technology*, pp.246-249, Dhaka, Bangladesh, March 2007.

[17] **SA. Hossain**, SMM. Islam, and R. Debnath. Improvement of the Performance of DCT Based Digital Image Watermarking Technique. *Proceedings of ICCIT 2006 - the 9th International Conference on Computer and Information Technology*, Dhaka, Bangladesh. Dec 2006.

[18] **SA. Hossain**, and MIA. Khan. Designing 14-Segment Display for English Alphabet. *Proceedings of ICCIT 2006 - the 7th International Conference on Computer and Information Technology*, Dhaka, Bangladesh. Dec 2004.

d. <u>Non-refereed contributions (Technical Reports and Thesis)</u>

[19] **SA. Hossain**. *Design and development of a framework to bridge the gap between real and virtual.* Master's Thesis, University of Ottawa, Ottawa, Canada, Oct 2011.

[20] **SA. Hossain**, SMM. Islam. *Efficient Digital Image Watermarking Technique Based On Discrete Cosine Transform and Discrete Wavelet Transform.* Undergraduate Thesis, Khulna University, Khulna, Bangladesh, Dec 2006.

Presentations

SOA-based Multimedia Services for Intelligent Surveillance — Toronto, Canada
IBM Centers for Advanced Studies: CASCON S3 Workshop — Nov 2011

Bringing Virtual Events into Real Life in SL Home Automation Sys. — Ottawa, Canada
VECIMS Conference — Sept 2011

SOA based Service Integration for Int. Surveillance in a Sensor Env. — Ottawa, Canada
MEdia-Server and Support for Advanced Gaming Environments Workshop — Feb 2011

Flexible SOA based Service Integration for Intelligent Surveillance — Toronto, Canada
IBM Centers for Advanced Studies: CASCON S3 Workshop — Nov 2010

DWT Based Watermarking Technique and its Robustness — Dhaka, Bangladesh
International Conference on Information and Communication Technology — Mar 2007

Improvement of the Performance of DCT Based Watermarking — Dhaka, Bangladesh
9th International Conference on Computer and Information Technology — Dec 2006

Submarine Cable, prob. and benefits in the context of Bangladesh — Khulna, Bangladesh
Undergraduate Seminar — Jun 2006

Extra Curricular

Reviewer — Barcelona, Spain
IEEE International Conference on Multimedia & Expo (ICME) — Jul 2011

Programming Contest Coordinator — Khulna, Bangladesh
CSE Discipline, Khulna University — 2008-2013

Associate member — Dhaka, Bangladesh
Engineers Institution Bangladesh (IEB) — 2008-2012

Student member — NY, USA
Institute of Electrical and Electronics Engineers Inc. (IEEE) — 2003-2007

Key Projects

Broadcasting and Monitoring System www.kusmartclass.org — Khulna University
Smart class room. — Dec 2015-Present

CSE KU Website www.cseku.ac.bd — CSE Department, Khulna University
Custom PHP site — Jan 2013-Present

Asset Management System — Faculty of Arts, University of Ottawa, Canada
Web based asset management tool. — July 2011-Sept 2012

Organization Chart Management Tool — Comm Directorate, University of Ottawa, Canada
Graphical organization chart management tool. — Dec 2010-Feb 2011

- **McrLab Website (www.mcrlab.uottawa.ca)** McrLab, University of Ottawa, Canada
  Joomla based web site. *Sept-Nov, 2010*
- **Electronics Shop Management System** Habib Electronics, Bangladesh
  Web based electronic shop management system. *Sep 2009-Mar 2010*
- **FedNet Speech Annotation Tool (www.fednet.net)** Jaxara IT Ltd, Bangladesh
  Automated speech to text annotation tool. *Aug-Sept, 2010*
- **ASLA LACES Site (laces.asla.org)** Jaxara IT Ltd, Bangladesh
  CMS based educational web site. *Mar-Jul, 2010*
- **AGIS Public Site (www.agis.com)** Jaxara IT Ltd, Bangladesh
  CMS based public web site for AGIS Inc. *Jan-Feb, 2010*
- **Groupcare Portal (portal.groupcare.dk)** Pyxisnet Ltd, Bangladesh
  Web-based collaborative tools in Denmark. *Apr-Dec, 2007*
- **IT Asset Management** Pacific Bangladesh Telecom Ltd, Bangladesh
  An inventory management system. *Dec 2005-Jan 2006*
- **Subscriber Entry Management System** Pacific Bangladesh Telecom Ltd, Bangladesh
  OCR based automatic form entry tool. *Jan-Feb, 2006*
- **Programming Contest Control System** Khulna University, Bangladesh
  Automated team based programming contest control system. *May-Aug, 2005*
- **Logic Circuit Simulator** Khulna University, Bangladesh
  Graphical electronic logic circuit simulation tool. *May-Aug, 2005*