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Dr. Khondaker Abdullah -Al-Mamun

Professor, Dept. of CSE & Director, IRIIC

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Bio

Khondaker A. Mamun received his Ph.D. in Computer and Biomedical Engineering from University of Southampton, UK. After that he worked as a Postdoctoral Research Fellow in the PRISM Lab with joint appointment from Institute of Biomaterials and Biomedical Engineering (IBBME), University of Toronto, Toronto, Canada and Bloorview Research Institute, Holland Bloorview Kids Rehabilitation Hospital, Toronto, Canada. Since October 2014, he is working as an Associate Professor and then Professor at the Department of Computer Science & Engineering, United International University (UIU), Dhaka, Bangladesh. Prof. Mamun is the Founder and Director of Advanced Intelligent Multidisciplinary Systems Lab (AIMS Lab) at UIU, where his team actively performs research on the applications of 4IR technologies like, artificial intelligence, big data and internet of things in healthcare, disabilities, brain computer interface (BCI) and education. He has published more than 130 peer reviewed international journal and conference articles. He has invented and implemented a number of digital healthcare and rehabilitations service delivery model and mobile based solutions for developing countries. He also hold a number of patents. His research and innovation has also been featured in a number of local and international news outlets including New Scientist and BBC. His contribution in the innovation and sustainable development is recognized internationally and by the government of Bangladesh. Currently, Prof. Mamun is leading more 10 national and international research projects in his lab. Prof. Mamun is the founder of CMED Health (www.cmed.com.bd), a startup that commercialized from research of AIMS Lab, UIU and focuses on health inclusion through digital healthcare platform. CMED Health is currently serving over 3 million people in Bangladesh and working to attain SDG 3 through achieving universal health coverage (UHC). CMED Health is the winner of National ICT Award 2017 and 2019; APICTA Award 2019 (Vietnam); Bangladesh Business Innovation Award 2018 and 2019; DBS-NUS Social Innovation Award 2018 (Singapore); SeedStarWorld Global Innovation Award 2018 (Switzerland); Startup Challenge 2017, and GP Accelerator 2016 Award. He also received National ICT Award 2017 and APICTA Award 2017 for Autism Barta (Smart Phone App for Autism Screening) and Bolte Chai (Smart Phone App for enhancing communications for nonverbal children). He is the organizer and general chair of the first medical engineering conference, MediTec 2016 (International Conference of Medical Engineering, Health Informatics and Technology) in Bangladesh supported by IEEE EMBS. He is also the organizer and chair of the first and second International Neuroscience School (IBRO APRC 2017 and 2019) to develop future neuroscience researcher in Bangladesh, sponsored by International Brain Research Organization (IBRO). With the IBRO support, Prof. Mamun has introduced first Deep Brain Stimulation surgery for Parkinson's patients in Bangladesh

in collaboration with National Institute of Neuroscience and Hospital and Prof. Tipu Z. Aziz, University of Oxford, UK. Prof. Mamun is also the contributor and topic driver of WHO/ITU Focus Group on AI for Health (FG-AI4H), Technical Working Group member and contributor for developing Digital Health Strategy 2020-2025 for the Government of Bangladesh. He is also a national consultant for information system and data management for health system of MTR of 4th HPNSP, Ministry of Health and Family Welfare, Government of Bangladesh.

Education

Post Doctoral

Institute of Biomaterials and Biomedical Engineering (IBBME),
Holland Bloorview Kids Rehabilitation Hospital

University of Toronto, Canada, 2012-2014. **Doctor of Philosophy (Ph.D.)**

Computer Science and Biomedical Engineering

University of Southampton, UK, 2012.

Dissertation: Pattern Identification of Movement Related States in Biosignals

Supervisor: Prof. Shouyan Wang, University of Southampton, UK

Examiner: Prof. John Stein, University of Oxford, UK and Chair, Dyslexia Research Trust, UK, and Dr. David Simpson, University of Southampton, UK **Master of Science (M.Sc. Engg.)**

Computer Science and Engineering (CSE)

Bangladesh University of Engineering and Technology (BUET), Dhaka, Bangladesh, 2007.

Dissertation: Memory Efficient Data Structure for Static Huffman Tree

Supervisor: Prof. Dr. Md. Mostofa Akbar, Bangladesh University of Engineering and Technology, Bangladesh **Bachelor of Science (B.Sc. Engg.)**

Computer Science and Engineering (CSE)

Ahsanullah University of Science and Technology (AUST), Dhaka, Bangladesh, (Ranked First in order of merit), 2002.

Dissertation: Architecture of Enterprise Resource Planning (ERP) for a Group of Companies

Supervisor: Dr. Tamjidul Hoque, University of New Orleans, USA. **Higher Secondary School Certificate Exam (HSC)**
Group of Sciences

Nanglakot H.M. Degree College, Comilla, Bangladesh, 1997. **Secondary School Certificate Exam (SSC)**

Group of Sciences

Nangalkot A.R. High School, Comilla, Bangladesh, 1995.

Work Experience

May 2018 – to date United International University (UIU), Dhaka, Bangladesh.

Professor, Department of Computer Science & Engineering (CSE)

Founder & Director, AIMS Lab (Advanced Intelligent Multidisciplinary Systems Lab) **Oct 2014 – April 2018 United International University (UIU), Dhaka, Bangladesh.**

Associate Professor, Department of Computer Science & Engineering (CSE)

Founder & Director, AIMS Lab (Advanced Intelligent Multidisciplinary Systems Lab) **May 2012 – Jul 2014 University of Toronto, Toronto, Ontario, Canada.**

Research Fellow, Institute of Biomaterials and Biomedical Engineering (IBBME)

Research Fellow (Cross appointment), Holland Bloorview Kids Rehabilitation Hospital (Canada's largest children's rehabilitation teaching hospital), Toronto, Canada. **Jun 2006 – Oct 2014 Ahsanullah University of Science and Technology (AUST), Dhaka, Bangladesh.**

Assistant Professor, Department of Computer Science & Engineering (CSE) **Oct 2009 – Jul 2012 University of Southampton, Southampton, Southampton, UK.**

Par-time Lecturer / Demonstrator, Faculty of Engineering and the Environments. **Oct 2008 – Jul 2012 University of Southampton, Southampton, Southampton, UK.**

PhD Research Student, Institute of Sound and Vibration Research. **Nov 2007 – Jul 2008 King Saud University (KSU), Riyadh, Saudi Arabia.**

Researcher, College of Computer and Information Sciences (CCIS). **Apr 2003 – Jun 2006 Ahsanullah University of Science and Technology (AUST), Dhaka, Bangladesh.**

Lecturer, Department of Computer Science & Engineering (CSE) **Oct 2002 – Apr 2003 Ahsanullah University of Science and Technology (AUST), Dhaka, Bangladesh.**

Lecturer (Part-time), Department of Computer Science & Engineering (CSE) **Oct 2004 – Oct 2007 Ahsanullah University of Science and Technology (AUST), Dhaka, Bangladesh.**

CCNA Instructor (part-time), Cisco Networking Academy Program (CNAP). **Mar 2007 – Oct 2007 United International University (UIU), Dhaka, Bangladesh.**

CCNA Instructor (part-time), Cisco Networking Academy Program (CNAP).

Research Interests

- Intelligent Systems
- Brain Machine Interface (BMI)
- Signal and Image Processing
- Pattern Recognition and Machine learning
- Neurocomputing
- Access communication and Assistive Technologies
- Human Computer Interaction (HCI)
- Feature Extraction and Classification of Biomedical signals
- Mobile Technology for Health Care Applications
- Health Informatics
- Education Quality Management
- Distance learning and technology enhance leaning
- Mobile applications for diagnostics and health management

Awards & Grants

1. Achieved Autism and Other NDD related Awards 2022 for Autism Barta (Smart Phone App for Autism Screening) and Bolte Chai (Smart Phone App for enhancing communications for nonverbal children).
2. “Bolte Chai: An Intelligent Integrated Platform to Support Verbally Challenged People”- AIMS Lab has received the Merit award at the BASIS NATIONAL ICT Award 2020 in the Indigenous and community services category, June 2021.
3. “Bolte Chai: An Intelligent Integrated Platform to Support Verbally Challenged People”- AIMS Lab has received the Honorable Mention at the 3rd Bangladesh Innovation Award 2021 in the Best Innovation-Product Development category, March 2021.
4. CMED Health was won for Outstanding Contribution during COVID-19, e-COMMERCE MOVERS AWARD 2020-eCMA, e-Commerce Association of Bangladesh on November 2020.
5. CMED Health was won merit awards in Healthcare, 10th Asia Pacific ICT Alliance (APICTA) Awards 2019, November 2019.
6. CMED Health was won 1st Runner-up in Healthcare, BASIS ICT National Awards 2019, October 2019.
7. CMED Health has won the Best Innovation, Bangladesh Business Innovation Awards 2019 in Le Meridien Dhaka in October 2019.
8. CMED Health, the Dhaka-based preventive healthcare startup, has won the Innovation Prize by TAG Heuer at Seedstars Summit 2018 in Switzerland, April 2018.
9. CMED Health has won The HEAD Foundation Innovative Social Enterprise Award, Education in the DBS “NUS Social Venture Challenge Asia 2018 in Singapore in October 2018.
10. CMED Health won in the category of SDG Inclusion in the Bangladesh Innovation Award hosted on 20th October 2018 in the Le Meridien, Dhaka, Bangladesh.
11. PVDctor Project won in the category of Research and Development inclusion in Innovation fund Grand Awards 2018. This project was funded by ICT Division, GoB.
12. Bolte Chai-Digital Communication App for Autistic and NDD Non-Verbal Children was won Research and Development Category in BASIS National ICT Award 2017. This project was funded by ICT Division, GoB.
13. CMED Health won in the category of Health and Wellbeing in the BASIS National ICT Award 2017, Dhaka, Bangladesh. This project was initially funded by ICT Division, GoB and now working as a Preventive Healthcare Startup in partnership with Grameen Phone. An example of Research Commercialization in Bangladesh.
14. Autism Barta-A smart phone app won in the category of Inclusion and Community in the BASIS National ICT Award 2017, Dhaka Bangladesh.
15. Bolte Chai-Digital Communication App was won Research and Development Category, Asia Pacific ICT Alliance (APICTA) Award 2017. This project was funded by ICT Division, GoB.
16. Autism Barta-A smart phone App was won Inclusion and Community Category Asia Pacific ICT Alliance (APICTA) Award 2017. This project was funded by A2I, PM Office, GoB.
17. Autism Barta-A smart phone app was won Inclusion category in National Mobile App Award 2016. This project was funded by A2I, PM Office, GoB.
18. Earned position in Marquis Who’s Who in the World 31th Edition, 2014.
19. Full grants for attending international conferences (PGBioMed 2009, Oxford University, UK [GBP. 300]; INSPIRE 2009, Imperial College London, UK [GBP. 200]; INSPIRE 2010, University College London, UK [GBP. 200]; MLSP 2010, Finland [GBP. 1200]; SET for BRITAIN 2011, House of Commons, London, UK [GBP. 200]) from Engineering and Physical Sciences Research Council (EPSRC), UK.
20. Full grant for attending CINN Summer School 2010 (University of Reading, UK) from Mathematical Neuroscience Network (MNN), UK [GBP. 500].

21. Full grant for attending workshop (Mathematical Neuroscience 2010, Edinburgh, UK) from Mathematical Neuroscience Network (MNN), UK [GBP. 300].
22. Ph.D. Scholarship (The Lord Rayleigh Scholarship and EPSRC Grant), 2008 – 2011, Institute of Sound and Vibration Research (ISVR), University of Southampton, UK [GBP. 80,000].
23. International Doctoral Scholarship, October 2008, Gipsa-lab, Grenoble INP, France (declined).
24. Full grants for attending international conferences (ISIVC – 2008, Spain; INTERSPEECH – 2008, Australia) from Prince Sultan Bin Abdulaziz International Program for Distinguished Research Grants, King Saud University, KSA [SAR. 25,000].
25. Prince Sultan Bin Abdulaziz International Program for Distinguished Research Scholarship, King Saud University, KSA for research, 2007 – 2008 [SAR. 60,000].
26. International Doctoral Studentship Award, October 2007, Telecommunications software and systems group, Waterford Institute of Technology, Ireland (declined).
27. Full grant for attending and completing Fundamentals of Wireless Local Area Network (FWL) instructor Training (University of Indonesia, Jakarta, Indonesia, 2007) from USAID and Ahsanullah University of Science and Technology, Dhaka, Bangladesh [BDT. 70,000].
28. Partial grants for attending international conferences (M2USIC – 2006, Malaysia; ICECE 06, Bangladesh) from Ahsanullah University of Science and Technology, Dhaka, Bangladesh [BDT. 30,000].
29. Full grant for completing CCNA instructor Training (BUET, Bangladesh 2004) from Ahsanullah University of Science and Technology, Dhaka, Bangladesh [BDT. 24,000].
30. Dean’s Award and Tuition Fee Scholarship for the full four years of the undergraduate study from Ahsanullah University of Science and Technology, Dhaka, Bangladesh, 1999-2002 [BDT. 135,000].
31. Achieved – Khanbahadur Ahsanullah Podak (Gold Medal) – for securing the highest CGPA (3.931 on a scale of 4.0, Top position) in the Bachelor Degree program of the year 2002.

Membership

1. Fellow, *Bangladesh Computer Society*.
2. Member, *Institute of Electrical and Electronics Engineers (IEEE)*.
3. Member, *IEEE Communications Society*.
4. Member, *IEEE Engineering in Medicine and Biology Society*.
5. Fellow, *Institute of Engineers – Bangladesh (IEB)*.
6. Life Member, *Bangladesh Bioethics Society*

Professional Activities

1. 15 years of experience in working as advisor, consultant, designer, and/or implementation lead of government and nongovernment projects in ICT, Digital Health, HMIS, EMIS, Education and Disabilities including Autism, NDD at home and abroad.
2. Experience in working as consultant of government and nongovernment projects in Digital Health Strategy, Last mile health service, evaluation of e-MIS/e-health capacity, interoperability, privacy and security (GDPR/HIPAA).
3. National Consultant for information system and data management for health system of MTR of 4th HPNSP 2017-2022, Ministry of Health and Family Welfare, Government of Bangladesh. Reviewed and evaluated all MIS of all OPs of DGHS, DGFP, DGNM and others under MOHFW.
3. Contributor and topic driver of WHO/ITU Focus Group on AI for Health (FG-AI4H).
4. Technical Working Group member and contributor for developing Digital Health Strategy 2020-2025 for the MOHFW, Government of Bangladesh.
5. Hold patent on Digital Health Inclusion Model for achieving Universal Health Coverage.
6. Innovator, CMED: Cloud based medical system framework for rural health monitoring in developing countries.
7. Innovator, Bolte Chai: An augmentative and alternative communication Tools (Device & App) for enhancing communication for nonverbal children.
8. Innovator, Bolte Chai Plus: An intelligent cloud based communication tools to enhance communication, speech and language for verbally challenged children with Autism and NDD
9. Innovator, Autism Barta: A Mobile Interactive, Community-based Automated Tool for Screening Autism.
10. Innovator, PVDctor: Cloud based Virtual Doctor for Parkinson’s Disease Screening and Monitoring using AI.
11. Innovator, Virtual Eye Doc: A Cloud Based Smart Application for Eye Care.
12. Innovator, Brain Computer Interface (BCI) based Neuromarketing System
13. Organizer, First Deep Brain Stimulation Surgery for Parkinson’s disease in Bangladesh (2017).
14. Organizer, First and Second IBRO APRC NeuroScience Workshop & Brain Symposium in Bangladesh (2017, 2019).
15. Organizer, First International Medical Engineering Conference (MediTec 2016) in Bangladesh.
16. Published more than 100 articles as monographs, books sections, international journals, conferences, short paper, abstract. Acted as international journal and conference reviewer, session chair, technical and organizing committee

member as well as organizer.

17. Research featured in news outlets locally (news and television) and internationally including New Scientist and BCC.
18. 15+ years of experience in supervising graduate and undergraduate research (2 PhD, 20 Masters & 70 Undergraduate theses, 30 internship/summer projects).
19. 12+ years of experience in university teaching.
20. Experience in health and medical information system analysis and software design, development Implementation.
21. Experience in writing research grant applications (Last five years, about TK 40 million fund received).
22. Delivered more than 100 presentations as Keynote & Invited speaker at home and abroad.
23. Experience in working on scientific knowledge translation (from research to commercialization).
24. Achieved Khanbahadur Ahsanullah Podak (Gold Medal) for securing the highest CGPA in the Bachelor Degree program of the year 2002.
25. Member, Organizing Committee, SKIMA 2014, Dhaka, Bangladesh.
26. Reviewer, IEEE Robotics and Automation Magazine.
27. Reviewer, Journal NeuroEngineering and Rehabilitations, BMC.
28. Reviewer, Journal of Computers in Human Behavior, Elsevier.
29. Reviewer, Research Ethics Board, Bloorview Research Institute, Holland Bloorview Kids Rehabilitation Hospital, University of Toronto, Toronto Canada.
30. Reviewer, Graduate Scholarship Program, Bloorview Research Institute, Holland Bloorview Kids Rehabilitation Hospital, University of Toronto, Toronto Canada
31. Member, Program Committee, IEEE Asia-Pacific World Congress on Computer Science and Engineering 2014 (IEEE APWC on CSE 2014), Fiji, November 4-5, 2014.
32. Reviewer, IEEE International Conference on Electrical and Computer Engineering (ICECE 2014), Dhaka, Bangladesh, December 20-22, 2014.
33. Reviewer, The IEEE RAS/EMBS International Conference on Biomedical Robotics and Biomechatronics (BioRob 2014), Brazil, August 12-15, 2014.
34. Reviewer, IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS 2014), Chicago, USA, September 14-18, 2014.
35. Reviewer, The 9th Annual International Joint Conferences on Computer, Information, Systems Sciences, & Engineering (CISSE 2013), University of Bridgeport, USA, December 12-14, 2013.
36. Reviewer, IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS 2013), Tokyo, Japan, November 3-7, 2013.
37. Reviewer and Judge, The 7th Annual Anne & David Ward Summer Student Research Day, Bloorview Research Institute, Holland Bloorview Kids Rehabilitation Hospital, University of Toronto, Toronto Canada, July 23, 2013.
38. Reviewer, The 8th International Workshop on Systems, Signal Processing and their Applications (WOSSPA2013), Algiers, Algeria, 12-15 May 2013.
39. Reviewer, The Second International Conference on e-Technologies and Networks for Development (ICeND 2013), Kuala Lumpur, Malaysia, March 4-6, 2013.
40. Reviewer, The IEEE RAS/EMBS International Conference on Biomedical Robotics and Biomechatronics (BioRob 2012), Italy, June 24-27, 2012.
41. Reviewer, Public Journal of {Engineering, Electrical Engineering, Medicine, Biology}, (www.PublicJournals.org).
42. Editorial board member, Lecture Notes in Information Science and Technology (<http://orslib.org/Inist/editorialboard.html>).
43. Member, International Program Committee, The 2nd International Conference on Informatics, Electronics & Vision (ICIEV 2013), May 17-18, 2013, Dhaka, Bangladesh.
44. Member, Steering Committee, Southampton Neurosciences Group (SoNG), University of Southampton, UK, 2011-2012.

Publication

Conference Papers

2017## "Bolte Chai" An Android application for verbally challenged children Conference: 2017 4th International Conference on Advances in Electrical Engineering (ICAEE) Author List: Hamudi H. Sonet, Khondaker A. Mamun 2017## "Bolte Chai" An Android application for verbally challenged children Conference: 2017 4th International Conference on Advances in Electrical Engineering (ICAEE) Author List: Hamudi H. Sonet, Khondaker A. Mamun

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