

## DR. MOHAMMAD SHAFIUL ALAM

### Professor

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Faculty of Engineering and Technology,  
University of Dhaka,  
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### Research fellowship

#### University of Science, Malaysia (USM), Malaysia

School of Electrical and Electronic Engineering  
Sept 21, 2015 – Oct 16, 2015

#### Anglia Ruskin University, UK

Anglia Ruskin IT Research Institute  
Jan 12, 2015 – Apr 12, 2015

#### University of Northumbria, Newcastle upon Tyne, UK

Department of Computer Sciences & Digital Technology  
Sept 15, 2012 – Dec 15, 2012

#### University of Bradford, UK

School of Computing, Informatics and Media  
Nov 2009 – Aug 2010

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### Education

**PhD**, Department of Automatic Control and Systems Engineering,  
**University of Sheffield, UK**, July 2007

Dissertation: Genetic and Swarm Optimization Algorithms for Modeling and Control of Dynamic Systems

**MSc**, Department of Applied Physics and Electronics,  
University of Dhaka, Bangladesh, August 1997  
First class (1<sup>st</sup> in merit list)

**BSc (Hons)**, Department of Applied Physics and Electronics, University of Dhaka, Bangladesh, February 1995,  
First class (8<sup>th</sup> in merit list)

**HSC (Science)**, Rajshahi Cadet College, 1989, 11<sup>th</sup> in combined merit list

**SSC (Science)**, Rajshahi Cadet College, 1987, 2<sup>nd</sup> in combined merit list

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### Expertise

- a) Robotics and Intelligent Control
- b) Artificial Intelligence, Neural Networks, Fuzzy Logic and Expert Systems
- c) Embedded Systems, Microcontroller & Microprocessor based Systems
- d) Evolutionary Algorithms, Swarm Intelligence and Multi-objective optimization
- e) Biomedical Engineering and Systems Biology
- f) Signal Processing, Adaptive Filters and System

## Honors and Award

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- **TWAS-USM Visiting Researcher Fellowship in 2015**
- **Commonwealth Post-doctoral research fellowship in 2014**
- **Award of Scientific Excellence**, in *7th International Conference on Practical Applications of Computational Biology & Bioinformatics*, University of Salamanca, Spain, May 22-24, 2013.
- **Commonwealth Post-doctoral research fellowship in 2012**
- **Best Paper Award** in *1st International Conference on Computational Systems-Biology and Bioinformatics (CSBio 2010)*, Bangkok, Thailand, November 3-5, 2010.
- **Erasmus-mundus Post-doctoral research fellowship in 2009**
- **Nominated best paper** in *10th International Conference on Climbing and Walking Robots and the Support Technologies for Mobile Machines (CLAWAR)*, Singapore, 16–18 July 2007.
- **Commonwealth Scholarship Award in 2003 for studying PhD in the UK**
- **Securing First position in the First Class in MSc**
- **Dhaka University Scholarship for securing First Class in BSc (Hons)**
- **Talent Pool Scholarship of Rajshahi Board in 1987 for securing 2nd position in the combined merit list of the Secondary School Certificate Examination (SSC).**

## Research Grants

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- [1] University Grants Commission Project on “Electronic Stethoscope augmented with Artificial Intelligence based Computerized Diagnosis system for lung and heart diseases”, 2020—till date
- [2] Sub project manager, “Building Fab Lab at University of Dhaka for Innovation and Invention”, A project of University Grants Commission of Bangladesh Ministry of Education, Bangladesh Higher Education Quality Enhancement Project (HEQEP), Total Cost of the project: 1.87 million BDT, Implementation Period: One year Nine months years (Jan 2016 - Sept 2017)
- [3] University Grants Commission Project on “Development of Mobile-enabled intelligent electronic devices for detecting toxic chemicals of Bangladesh”, in 2015-2016.
- [4] University Grants Commission Project on “FPGA based smart solar tracking system”, in 2012-2014.
- [5] Alternate sub project manager: “Improvement of Research Facilities in Wireless and optical Fibre Communication”, A project of University Grants Commission of Bangladesh Ministry of Education, Bangladesh Higher Education Quality Enhancement Project (HEQEP), Total Cost of the project: 29.74 million BDT, Implementation Period: Three (3) years (April 2012 - March 2015)

## Research Supervision: PhD Students

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- [1] Mashuque Alamgir (Machine Learning based Type 2 Diabetes Prediction System Using Human DNA Sequencing)
- [2] Mahfuza Ferdousi (EMG – based Medical Decision Support System for Diagnosis of Neuromuscular Disorders using Hybrid Soft Computing Techniques and Information Technology)
- [3] Afroza Sultana (Research topic: *Processing and multi-scale analysis for the classification of surface Electromyographic signal and finding out its correlations with different motor neuron activities*)
- [4] Rahat Hossain Faisal (Research topic: *Modeling of cancer tumor growth and optimum control of chemotherapy drug doses*)
- [5] Mohammad Noor Nabi (Research topic: *Reconfigurable security dimension for embedded system design*)

## MSc Thesis

1. Bangla Hand Sign recognition algorithm using Convolutional Neural Network (2019)
2. Smart Alert System for Epileptic Seizure Detection and Prediction (2018)
3. Classification of Cancer Based on Microarray Gene Expression Data Using Clustering Techniques and Genetic Algorithm (2017)
4. A Computer Aided Prognosis System to Predict Breast Cancer Recurrence (2017)
5. Classification of EMG signals using Machine learning algorithms (2015)
6. Decision support system for Diabetes patients (MS project - 2015)
7. Physiologically based pharmacokinetic modelling of cancer tumour growth and designing of a decision support system for chemotherapy schedules (2014)
8. Design of Cancer Chemotherapy Schedules using Fuzzy Expert Control and Multi-Objective Evolutionary Algorithm (2013)
9. An Investigation on Mathematical Models for Glucose-Insulin System Dynamics for Diabetes (2013)
10. Model based design of Cancer Chemotherapy Drug Scheduling: A Multiple Objective Particle Swarm Optimization Process (2012)
11. Mathematical Modeling of Cancer Tumor growth and Optimum Drug Scheduling Using Fuzzy logic Controller (2012)
12. Model based Chemotherapy drug scheduling: a particle swarm optimization approach (2011)
13. Cancer tumor modeling and Chemotherapy drug scheduling using genetic algorithm( 2011)
14. Modeling of cancer tumor growth and Chemotherapy drug scheduling using fuzzy logic control (2011)
15. Design and analysis of chemotherapy and immunotherapy drug scheduling model for cancer tumour treatment (2010)
16. Modeling and Control of a Two-link Flexible Manipulator using Fuzzy Logic and Genetic Optimization Techniques (2009).
17. Nonlinear modeling and control of robotic systems using neural networks and particle swarm optimization (2009).
18. Particle Swarm Optimization Algorithms and Their Application in Controller Design (2008).
19. Base Station Placement of Mobile Communication System: A Particle Swarm Optimization Approach (2008)

## Undergraduate Project

1. Electronic Stethoscope augmented with Artificial Intelligence based Computerized Diagnosis system for lung and heart diseases (2020)
2. Hardware implementation of a cost efficient prosthetic hand using classified EMG signal (2018)
3. Classification of EMG Signals Using New Feature Set to control a low-cost Prosthetic Hand (2018)
4. Microcontroller Based Formalin Detector: Hardware Design & Implementation (2017)
5. Microcontroller-based Formalin Detection: Software Development and Analysis (2017)
6. Early detection and classification of epileptic seizures using machine learning algorithms (2016)
7. Design and Implementation of a 16-bit Microprocessor using FPGA(2015)
8. Design and Control of a Two-link Flexible Manipulator System (2015)

9. Hardware and Software Design for Robotic Arm Position Control (2014)
10. An FPGA Based Solar Tracking Control System (2014)
11. Design of Multi-drug Cancer Chemotherapy Schedules using Fuzzy Expert Control (2013)
12. Modeling of Cancer Tumor Growth and Model Based Chemotherapy Drug Scheduling (2011)
13. Fuzzy Logic Control of a Single-link Flexible Manipulator Systems (2010)
14. SEVERINO: Design and Implementation of an Inexpensive and User Friendly Microcontroller Development Platform (2010)
15. Modeling of a Twin Rotor Multi-Input Multi-Output System Using Neural Networks (2009)
16. Multi-objective evolutionary algorithms and their application in controller design (2008).
17. Modeling of a flexible dynamic system using ANFIS (2008).

### Teaching Modules

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1. Neural Networks and Fuzzy Logic (MSc)
2. Intelligent Systems Engineering (BSc)
3. Laboratory work on Digital Microprocessor Design (B.Sc-Engg.)
4. Laboratory work on Microprocessor and Assembly Language Programming (B.Sc-Engg.)
5. Laboratory work on Physics and Optics (B.Sc-Engg.)

### Previously conducted modules

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- Control Engineering
- Advanced Signal Processing
- Computer Architecture and Organization
- Microprocessor and Computer Interfacing
- Advanced Artificial Intelligence and Expert Systems
- Digital and Microprocessor Systems Design
- Parallel Processing and Distributed Architecture
- Communication Engineering: signal processing and digital systems
- Electrical Technology and Measuring Instrumentation
- Analog Electronics
- Digital Communication
- Principles of Telecommunication Networks
- Data Communication and Networking
- Applied Mechanics and Properties of Matter

## Employment

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| June 23, 2013 - till date     | : <b>Professor</b> , Department of Electrical and Electronic Engineering, University of Dhaka, Bangladesh                                |
| July 5, 2007 - June 22, 2013  | : <b>Associate Professor</b> , Department of Applied Physics, Electronics and Communication Engineering, University of Dhaka, Bangladesh |
| April 29, 2001 - June 4, 2007 | : <b>Assistant Professor</b> , Department of Applied Physics, Electronics and Communication Engineering, University of Dhaka, Bangladesh |
| Nov 23, 1997 - April 28, 2001 | : <b>Lecturer</b> , Department of Applied Physics and Electronics, University of Dhaka, Bangladesh                                       |
| Aug 1, 1997 - Nov 22, 1997    | : <b>Lecturer</b> , Department of Computer Science and Engineering, Queens University, Dhaka, Bangladesh                                 |

## List of Publications

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### Journal Publications

- [1] Abdulla Al Mamun, Aklima Begum, Ariful Islam, Ashraful Mamun, Md. Asaduzzaman, A F M Mustafizur Rahman, M Nazmul Haque Siddique and M Shafiu Alam (2020), Design, Implementation and Testing of a Microcontroller-based Formalin Detection Kit. *EUROPEAN JOURNAL OF ADVANCES IN ENGINEERING AND TECHNOLOGY*, 7(6), p. 1-12.
- [2] Afroza Sultana, Ariful Islam, M S Alam, Farruk Ahmed (2020), Cross Correlation Analysis of Multichannel EMG Signals for Finger Movements, *International Journal of Industrial Electronics and Electrical Engineering (IJIEEE)*, 8(3), p. 21-27.
- [3] Rahman, M.H., Rafique, S. and Alam, M.S., (2018). CMOL Based Quaded Transistor NAND Gate Building Block of Robust Nano Architecture. *Journal of Electrical and Electronic Engineering*, 5(6), p.242-249.
- [4] Rahman, M.H., Rafique, S. and Alam, M.S., (2017). A Fault Tolerant Voter Circuit for Triple Modular Redundant System. *Journal of Electrical and Electronic Engineering*, 5(5), pp.149-159.
- [5] Islam, A. and Alam, M. S. (2017). Classification of Electromyography Signals Using Support Vector Machine, *Dhaka University Journal of Applied Science & Engineering*, 4(1), pp. 45-52.
- [6] **Alam, M.S.** and Mondal, G.S. (2015). Model Based Design of Cancer Chemotherapy Drug Scheduling: A Particle Swarm Optimization Approach, *The Dhaka University Journal of Applied sciences and Engineering*, 3(2), pp. 161-166.
- [7] Afruz, J. and **Alam, M.S.** (2015). Non-linear model inversion control for air vehicle system using neural networks and particle swarm optimization, *The Dhaka University Journal of Applied sciences and Engineering*, 3(2), pp. 155-159.
- [8] **Alam, M.S.**, Jeasmin, N., Tonni, F.F., Khatun, A. and Mamun, S.M. (2015). An FPGA Based Solar Tracking Control System, *The Dhaka University Journal of Applied sciences and Engineering*, 3(2), pp. 167-171.
- [9] **Alam, M.S.**, Hossain, M.A. Algoul, S., Majumder, M.A., Al-Mamun M A., Sexton, G. and Phillips, R. (2013). Multi-Objective Multi-drug Scheduling Schemes for Cell Cycle Specific Cancer Treatment, *Journal of Computers & Chemical Engineering*, 58(11), pp. 14-32.
- [10] Nabi, M.N., **Alam, M.S.** and Ahmed, F. (2014). Security Aspects of Re-configurable FPGA based Crpto-System, *Journal of the Bangladesh Electronics Society*, 14(1-2)
- [11] Alam, N., Sultana, M., **Alam, M. S.**, Al-Mamun, M. A., and Hossain, M. A. (2013). Optimal intermittent dose schedules for chemotherapy using genetic algorithm. In *Advances in Distributed Computing and Artificial Intelligence Journal*, 1(5), pp-37-52.

- [12] **Alam, M.S.**, Algoul, S., Hossain, M.A. and Majumder, M.A. (2013). Chemotherapy Drug Scheduling: A Particle Swarm Optimisation Approach, *The Dhaka University Journal of Science*, 61(1), pp. 35-40.
- [13] Habib, M.A., **Alam, M.S.** and Siddique, N.H. (2012). Optimizing Coverage Performance of Multiple Random Path-planning Robots, *Paladyn. Journal of Behavioral Robotics*, 3(1), pp. 11-22.
- [14] Zebin, T. and **Alam, M.S.** (2011), Modeling and Control of a Two-link Flexible Manipulator using Fuzzy Logic and Genetic Optimization Techniques', *Journal of Computers*, 7(3), pp. 578-585, Academy Publisher.
- [15] **Alam, M.S.** (2011). Dynamic modelling of flexible manipulator system using genetic algorithm with fitness sharing based replacement policy, *The Dhaka University Journal of Science*, 60(2), pp. 239-245.
- [16] Habib, M.A., Islam, M.M., and **Alam, M.S.** (2011). Designing of controller: a multi-objective genetic optimization approach, *The Dhaka University Journal of Science*, 59(2), pp. 181-186.
- [17] Majumder, R. and **Alam, M.S.** (2011). Design and analysis of chemotherapy and immunotherapy drug scheduling model for cancer tumour treatment, *The Dhaka University Journal of Science*, 60(2), pp. 231-237.
- [18] Algoul, S., **Alam, M.S.**, Hossain, M.A. and Majumder, M.A. (2010). Multi-objective Optimal Chemotherapy Control Model for Cancer Treatment, *Springer Journal on Medical & Biomedical Engineering & Computing*; ISSN-1741-0444, 49(1), pp. 51-65, DOI: 10.1007/s11517-010-0678-y, Springer Verlag, Berlin.
- [19] **Alam, M.S.** and Tokhi, M.O. (2009). Selection and designing of command shaper for vibration control of flexible manipulator: a multi-objective optimization approach, *International Journal of Acoustics and Vibration*, 14(4), pp. 179-187.
- [20] **Alam, M.S.** and Tokhi, M.O. (2008). Designing feedforward command shapers with multi-objective genetic optimisation for vibration control of a single-link flexible manipulator, *Engineering Applications of Artificial Intelligence*, 21(2), pp. 229-246.
- [21] **Alam, M.S.** and Tokhi, M.O. (2008). Hybrid fuzzy logic control with genetic optimisation for a single-link flexible manipulator, *Engineering Applications of Artificial Intelligence*, 21(6), pp. 858-873.
- [22] Tokhi, M.O., Zain, M.Z.M., **Alam, M.S.**, Aldebrez, F.M., Hashim S.Z.M., and Darus I.Z.M. (2008). Genetic algorithm optimisation and control system design of flexible structures, *Journal of Intelligent System*, 17, Issue Supplement, ISSN: 0334-1860, pp. 133-168, ISSN (Online) 2191-026X, ISSN (Print) 0334-1860.
- [23] **Alam, M.S.** and Tokhi, M.O. (2008). Dynamic modelling of a twin rotor system: a genetic algorithm optimisation approach, *The Dhaka University Journal of Science*, 56(2), pp. 183-187.
- [24] **Alam, M.S.**, Aldebrez, F.M. and Tokhi, M.O. (2008). Augmented Feedforward and Feedback Control Scheme for Input Tracking and Vibration Control, *The Dhaka University Journal of Science*, 57(1), pp. 67-70.
- [25] **Alam, M.S.** and Tokhi, M.O. (2008). System identification of a twin rotor multi-input multi-output system using adaptive filters with pseudo random binary input, *The Dhaka University Journal of Science*, 57(2). pp. 131-136.
- [26] **Alam, M.S.** and Tokhi, M.O. (2007). Modelling of a twin rotor system: a particle swarm optimisation approach, *Proceedings of the Institution of Mechanical Engineers, Part G: Journal of Aerospace Engineering*, 221(3), pp. 353-374.
- [27] Tokhi, M.O. and **Alam, M.S.** (2007). Particle Swarm Optimisation Algorithms and Their Application to Controller Design for Flexible Structure Systems, *IST Transactions of Control Engineering-Theory and Applications*, 1(3), Issue-9, ISSN 1913-8849, pp. 12-25.
- [28] **Alam, M.S.** and Tokhi, M.O. (2007). Designing of command shaper using gain-delay units and particle swarm algorithm for vibration control of flexible system, *International Journal of Acoustics and Vibration*, 12(3), pp. 99-108.
- [29] **Alam, M.S.** and Tokhi, M.O. (2007). Dynamic modelling of a single-link flexible manipulator system: a particle swarm optimisation approach, *Low Frequency Noise, Vibration and Active Control*, 26(1), pp. 57-72.
- [30] **Alam, M.S.** and Tokhi, M.O. (2007). Design of a command shaper for vibration control of flexible system: a

genetic algorithm optimisation approach, *Low Frequency Noise, Vibration and Active Control*, 26(4), pp. 295-310.

- [31] Ahmed, M.U., **Alam, M.S.**, Huq, A. and Ahmed, F. (2006). Adaptive noise cancellation from speech signal using SUSC algorithm, *The Dhaka University Journal of Science*, 54(2), pp. 181-186.
- [32] Zain, M.Z.M., Tokhi, M.O. and **Alam, M.S.** (2005). Robustness of hybrid learning acceleration feedback control scheme in flexible manipulators, *Proceedings of World Academy of Science, Engineering and Technology*, ISSN 1307-6884, 6, pp. 143-146.
- [33] Hasan, M.Z., Anwar, A., Ahmed, F., **Alam, M.S.**, Huq, A. and Ahmed, F. (2005), Analysis of speed of operation of adaptive algorithms for noise cancellation, *The Dhaka University Journal of Science*, 53(2), pp. 111-118.
- [34] Kamal, S.H., **Alam, M.S.**, and Ahmed, F. (2004). Noise performance analysis of variable step size least mean square algorithm in adaptive noise cancellation, *The Dhaka University Journal of Science*, 52(2), pp. 179-186.
- [35] Sazzad, Z.M.P., **Alam, M.S.**, Moslehuddin A.S.M., and Ahmed, F. (2003). Design of Digital FIR filters by employing optimal method, *The Dhaka University Journal of Science*, 51(1), pp. 7-13.
- [36] Afreen, S., Sazzad, Z.M.P., **Alam, M.S.**, Huq, A. and Ahmed, F. (2002). Effects of the step size, the number of taps and samples on the Adaptive noise canceller in speech processing applications, *The Dhaka University Journal of Science*, 50(2), pp. 123-131.
- [37] Shanta, S., Huq, M.S., Moslehuddin, A.S.M., **Alam, M.S.**, Ahmed, F. (2001). Performance Evaluation of Parallel Architectures in Implementing the FFT Algorithm, *The Dhaka University Journal of Science*, 49(1), pp. 9-19.
- [38] Huq, M.S., Shanta, S., **Alam, M.S.**, Sazzad, Z.M. P., Ahmed, F. and Huq, A. (2000). Avoiding the Necessity of Window Functions in Nonparametric Spectrum Analysis without Sacrificing the performance, *The Dhaka University Journal of Science*, 48(2), pp.111-117.
- [39] Shaheed, M.H., Haider, S., **Alam, M.S.**, and Ahmed, F. (1999). Digital signal processing and analysis of standard signals, *The Dhaka University Journal of Science*, 47(1), pp. 25-33.
- [40] Sazzad, Z.M.P., **Alam, M.S.**, Moslehuddin A.S.M., and Ahmed, F. (1999). Design aspects of window-based digital FIR filters, *The Dhaka University Journal of Science*, 47(1), pp. 5-13.

### **Book Chapters**

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- [1] Alam, N., Sultana, M., Alam, M. S., Al-Mamun, M. A., & Hossain, M. A. (2013). Periodic Chemotherapy Dose Schedule Optimization Using Genetic Algorithm. In *Distributed Computing and Artificial Intelligence*, Advances in Intelligent Systems and Computing Volume 217, 2013, pp 503-511. Springer International Publishing.
- [2] Al-Mamun, M. A., Hossain, M. A., Alam, M. S., & Bass, R. (2013). A Cellular Automaton Model of the Effects of Maspin on Cell Migration. *Advances in Intelligent Systems and Computing* Volume, 222, pp 53-60, Springer International Publishing.
- [3] Alam M.S, Algoul, S, Hossain, M.A and Majumder, M.A (2010), Multi-objective Particle Swarm Optimisation for Phase Specific Cancer Drug Scheduling, *Communications in Computer and Information Science*, Volume 115, pp. 180-192, 2010, DOI: 10.1007/978-3-642-16750-8, Springer Verlag, Berlin, Proceedings of First International Conference, CSBio 2010, Bangkok, Thailand, November 3-5, 2010.
- [4] Algoul, S., Alam, M.S., Sakib, K., Hossain, M.A. and Majumder, M.A., (2010), MOGA-based Multi-drug Optimisation for Cancer Chemotherapy, *Advances in Intelligent and Soft Computing*, 2011, Volume 93/2011, pp. 133-140, Springer Verlag, Heidelberg.
- [5] Habib, M.A. Alam, M.S., Aldbrez, F. and Siddique, N.H. (2009). A genetic approach to optimize the coverage performance of multiple random path-planning robots, *MOBILE ROBOTICS: Solutions and Challenges*, Proceedings of the Twelfth International Conference on Climbing and Walking Robots and the Support Technologies for Mobile Machines, pp. 1091-1098, Istanbul, Turkey, 9 - 11 September 2009.

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- [6] Alam, M.S., Zain, M.Z.M., Tokhi, M.O. and Aldebrez, F.M. (2005). Design of hybrid learning control for flexible manipulators: a multi-objective optimisation approach, *CLAWAR 2005: Climbing and Walking Robots*, M O Tokhi, G S Virk and M A Hossain (eds.), Springer, Germany, ISBN 3-540-26413-2, pp. 599-606.
  - [7] Aldebrez, F.M., Alam, M.S. and Tokhi, M.O. (2005). Hybrid control scheme for tracking performance of a flexible system, *CLAWAR 2005: Climbing and Walking Robots*, M O Tokhi, G S Virk and M A Hossain (eds.), Springer, Germany, ISBN 3-540-26413-2, pp. 543-550.
  - [8] Zain, M.Z.M., Alam, M.S., Tokhi, M.O. and Mohamed Z. (2005). Simulation and experimental studies of hybrid learning control with acceleration feedback for flexible manipulators, *CLAWAR 2005: Climbing and Walking Robots*, M O Tokhi, G S Virk and M A Hossain (eds.), Springer, Germany, ISBN 3-540-26413-2, pp. 567-574.
  - [9] Hossain, M.A., Siddique, M.N.H., Tokhi, M.O. and Alam, M.S. (2005). Design Constraints in Implementing Real-time Algorithms for a Flexible Manipulator System, *CLAWAR 2005: Climbing and Walking Robots*, M O Tokhi, G S Virk and M A Hossain (eds.), Springer, Germany, ISBN 3-540-26413-2, pp. 583-590.
  - [10] Huq, M.S., Alam, M.S., Gharooni, S.C. and Tokhi, M.O. (2005). Design issues of spring brake orthosis: evolutionary algorithm approach, *CLAWAR 2005: Climbing and Walking Robots*, M O Tokhi, G S Virk and M A Hossain (eds.), Springer, Germany, ISBN 3-540-26413-2, pp. 81-88.

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### Refereed Conference Papers

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- [1] Arefa, I., Alam, M.S., Siddiquee, I. and Siddique, N., Performance Analysis of Machine Learning Algorithms for Hypertension Decision Support System. In *2019 IEEE International Conference on Robotics, Automation, Artificial-intelligence and Internet-of-Things (RAAICON)* (pp. 15-20). IEEE.
- [2] Mohammad Abdullah Nahid, N., Rahman, A., Das, T.K., Khabir, K.M., Islam, A. and Alam, M.S., 2019, May. Design and Implementation of DUFAB Hand, A Low-Cost Myoelectric Prosthetic Hand. In *2019 Joint 8th International Conference on Informatics, Electronics & Vision (ICIEV) and 2019 3rd International Conference on Imaging, Vision & Pattern Recognition (icIVPR)* (pp. 206-211). IEEE.
- [3] Al-Mamun, M Alamgir Hossain, Charles Fall, MS Alam and Rosemary Bass (2013), The effects of non-inhibitory serpin maspin on cell migration using an artificial neural network, *The 16th International Conference on Computer and Information Technology (ICCIT 2013)*, Khulna, Bangladesh.
- [4] Algoul, S., Alam, M.S., Hossain, M.A. and Majumder, M.A., (2013), Chemotherapy Drug Scheduling: A Particle Swarm Optimisation Approach, *The International Conference on Artificial Intelligence, ICAI'2013 - June 22-24, Sousse, Tunisia*.
- [5] Hossain, T.R., Ferdousy, R. and Alam M.S. (2013). Model Based Chemotherapeutic Drug Scheduling: A Multi-Objective Particle Swarm Optimization Approach, *2nd International Conference on Informatics, Electronics & Vision*, 17-18 May, Dhaka, Bangladesh.
- [6] Algoul, S., Alam, M.S., Hossain, M.A. and Majumder, M.A., (2011), Phase Specific Optimal Treatment for Cancer using Genetic and Swarm Intelligence Algorithms, *The 14th International Conference on Computer and Information Technology (ICCIT 2011)*, Dhaka, Bangladesh, 22-24 Dec. 2010.
- [7] Algoul, S., Alam, M.S., Sakib, K., Hossain, M.A. and Majumder, M.A., (2010), Feedback Control of Chemotherapy Drug Scheduling for Phase Specific Cancer Treatment, *The IEEE Fifth International Conference on Bio-Inspired Computing: Theories and Applications (BIC-TA 2010)*, pp. 1443-1450, Liverpool, UK, September 8 – 10.
- [8] Saltanat, N., Hossain, M.A. and Alam, M.S. (2010), An efficient pixel value based mapping scheme to delineate pectoral muscle from mammograms, *The IEEE Fifth International Conference on Bio-Inspired Computing: Theories and Applications (BIC-TA 2010)*, pp. 1510-1517, Liverpool, UK, September 8 – 10.
- [9] Sowan, B., Dahal, K.P., Hossain, M.A., and Alam, M.S. (2010), Diversification of Fuzzy Association Rules to

Improve Prediction Accuracy, *IEEE International Conference on Fuzzy Systems (FUZZ-IEEE 2010) - IEEE World Congress on Computational Intelligence*, Barcelona, Spain.

- [10] Algoul, S., Alam, M.S., Hossain, M.A. and Majumder, M.A., (2010), Multi-Objective Optimisation for Multi-Drug Chemotherapy Scheduling, *The 13th International Conference on Computer and Information Technology (ICCIT 2010)*, Dhaka, Bangladesh, 23-25 Dec. 2010.
- [11] Zebin, T. and Alam, M.S. (2010), Dynamic Modeling and Fuzzy Logic Control of a Two-link Flexible Manipulator using Genetic Optimization Techniques, *The 13th International Conference on Computer and Information Technology (ICCIT 2010)*, Dhaka, Bangladesh, Dec. 23-25.
- [12] Afruz, J. and Alam, M.S., (2010), Non-linear Modelling of a Twin Rotor System Using Particle Swarm Optimization, *International Computer Symposium (ICS 2010)*, Dec. 16-18, 2010, Tainan, Taiwan.
- [13] Showkat, M.J., Paul, B., Matin, M.A., Alam, M.S. (2009). Optimal Sink Location in Wireless Sensor Networks Using Particle Swarm Optimization, *Proceedings of 2009 IEEE International Conference on Antennas, Propagation and Systems (INAS 2009)*, 3-5 Dec. 2009, Johor, Malaysia.
- [14] Habib, M.A., Alam M.S. and Hossain, M.A. (2009). A genetic approach to optimize the floor cleaning performance of a random path-planning mobile robot, *Proceedings of the International Conference on Software, Knowledge, Information Management and Applications (SKIMA)*, Fes, Morocco, 21-23 Oct.
- [15] Alam, M.S., Hossain, M.A. and Tokhi, M.O. (2008). A modified multi-objective particle swarm optimisation using non-dominated sorting and fitness sharing techniques, *Proceedings of the International Conference on Software, Knowledge, Information Management and Applications (SKIMA)*-Kathmandu, Nepal.
- [16] Tokhi, M.O. and Alam, M.S. (2007). Particle swarm optimisation algorithms and their application to controller design for flexible structure systems, *Proceedings of the International Conference on Computer, Control and Communication*, Karachi (Pakistan), 12-13 November, pp. 7-18.
- [17] Alam, M.S., Hossain, M.A. and Tokhi, M.O. (2007). Designing of a command shaper using multi-objective particle swarm algorithm for vibration control of a single-link flexible manipulator system, *Advances in Climbing and Walking Robots-10th International Conference (CLAWAR 2007)*, World Scientific Publishing, 11 Sept. 2007, ISBN-10: 9812708154.
- [18] Alam, M.S., Hossain, M.A. and Tokhi, M.O. (2007). Design of command shaper using gain-delay units and particle swarm optimisation for vibration control of a flexible system, *14th International Congress on Sound and Vibration*, Cairns, Australia, 9-12 July.
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### Professional Qualification & Training

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- Attended a workshop on **Embedded System Design & Development** held from 24 February – 28 February, 2013 at Institute of Information and Communication Technology (IICT), Bangladesh University of Engineering and technology (BUET), Dhaka, Bangladesh.
- **High Speed Computation and Grid computing** in The University of Sheffield, UK, Dec 2005.
- **Research Training Program** (35 credit hours) in the Department of Automatic Control and Systems Engineering, The University of Sheffield, UK, 2003-2004.

### Invited Talks and Seminar, workshop & Conference Presentations

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- [1] **Workshop on Applied Genetic Algorithm using MATLAB**, Fab Lab DU, August 14, 2020
- [2] **Workshop on Applied Particle Swarm Optimization Algorithm using MATLAB**, Fab lab DU, June 17, 2020
- [3] **Fuzzy Expert Control and Evolutionary Algorithms in Planning Chemotherapy Drug Doses and Schedules for Cancer Treatment**, School of Electrical and Electronic Engineering, University of Science, Malaysia (USM), October 15, 2015
- [4] **Design of Cancer Chemotherapy Schedules Using Fuzzy Expert Control and Multi-Objective Evolutionary**

- [5] **Genetic and Swarm Optimisation Algorithms in Planning Chemotherapy Drug Doses and Schedules for Cancer Treatment**, Northumbria University at Newcastle, UK, Dec 4, 2012.
- [6] **Genetic and Swarm Optimisation Algorithms for Modelling and Control of Dynamic Systems**, INTELLIGENT SYSTEMS RESEARCH CENTRE, CO-SPONSORED BY IEEE CIS UKRI CHAPTER, THE UNIVERSITY OF ULSTER, MAGEE CAMPUS, NI, UK, NOV 14, 2012.
- [7] **Multi-objective Evolutionary Algorithms for Tumour Modelling and Chemotherapy Drug Scheduling**, Department of Automatic Control and Systems Engineering, The University of Sheffield, Sheffield, UK, July 20, 2010.
- [8] **Multi-objective Evolutionary Algorithms for Chemotherapy Drug Scheduling**, School of Computing, Informatics and Media, The University of Bradford, Bradford, UK, May 13, 2009.
- [9] **Genetic and swarm intelligence algorithms and their application in control engineering**, Department of Applied Physics, Electronics and Communication Engineering, The University of Dhaka, Nov 2007.
- [10] **Particle Swarm Optimisation: method and applications in control engineering**, Department of Computer Science and Engineering, The University of Dhaka, Oct 2007.
- [11] **Design of a hybrid fuzzy logic controller for a single link flexible manipulator with genetic algorithms**, International Conference Control 2006, Glasgow, Scotland, 30Aug- 1st Sept.
- [12] **An Evolutionary Group Method of Data Handling for Time Series Forecasting**, IEEE SMC UK-RI 5th Chapter Conference on Advances in Cybernetic Systems 2006, Sheffield Hallam University, Sheffield, UK, 7-8 Sept.
- [13] **Design of hybrid learning control for flexible manipulators: a multi-objective optimisation approach**, The 8th International Conference on Climbing and Walking Robots and the Support technologies for Mobile Machines, CLAWAR 2005, London, UK 13-15 Sept.
- [14] **System identification of twin rotor multi-input multi-output system using adaptive filters with pseudo random binary input**, The 11th International Congress on Sound and Vibration, St.Petersburg, Russia, 5-8 July, 2004.
- [15] **Adaptive command shaping using genetic algorithms for vibration control**, IEEE SMC UK-RI 3rd Workshop on Intelligent Cybernetic Systems, Ulster, UK, 7-8 Sept., 2004.
- [16] **Adaptive IIR filtering techniques for dynamic modelling of a twin rotor system**, 7th Biennial Conference on Engineering Systems Design and Analysis, Manchester, UK, 19-22 July, 2004.

### Organization of International Conferences and Professional Activities

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- Member of Technical Program Committee, 3rd International Conference on Advances in Electrical Engineering (ICAEE). 17-19 December 2015, IUB Campus, Dhaka, Bangladesh.
- Member of International program committee of 18<sup>th</sup> International Conference on Climbing and Walking Robots, CLAWAR-2013, September 6-9, 2015, Hangzhou, China.
- Organizing Secretary of 8<sup>th</sup> International Conference on Software, Knowledge, Information Management and Applications (SKIMA), December 18-20, 2014, United International University, Dhaka, Bangladesh.
- Member of International program committee of 17<sup>th</sup> International Conference on Climbing and Walking Robots, CLAWAR-2013, July 21-23, 2014, Poland.

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- Member of International program committee of 16<sup>th</sup> International Conference on Climbing and Walking Robots, CLAWAR-2013, July 14-17, 2013, University of Technology, Sydney, Australia.
  - Member of International program committee of 15<sup>th</sup> International Conference on Climbing and Walking Robots and the Support technologies for Mobile Machines, CLAWAR-2012, July 16-19, 2012, John Hopkins University USA.
  - Member of International program committee of 14<sup>th</sup> International Conference on Climbing and Walking Robots and the Support technologies for Mobile Machines, CLAWAR-2011, Paris, France, September 6-8, 2011 at UPMC University.
  - Member of International Program Committee of International Conference on Software, Knowledge, Information Management and Applications (SKIMA), 18-21 August 2010, Paro, Bhutan.
  - Member of International Program Committee of International Conference on Software, Knowledge, Information Management and Applications (SKIMA), 18-21 March 2008, Kathmandu, Nepal.
  - Member of National program committee of 8<sup>th</sup> International Conference on Climbing and Walking Robots and the Support technologies for Mobile Machines, CLAWAR-2005, London, 13-15 Sept.
  - Member of program committee of Electronic conference and Exhibition 2003, Dhaka Bangladesh.
  - Professional training: Attended many professional development workshops/ programs, including Teaching Methodology, Research Methodology.
  - Reviewed many journal papers, including Elsevier transaction on Engineering Applications of Artificial Intelligence, Mechatronics, International Journal on Acoustics and Vibration etc.
  - Developed (2009) course/curriculum of “Computer Science and Information Technology” for the Higher Secondary Certificate program, under National Curriculum and Textbook Board, Ministry of Education, Bangladesh.
  - Project Supervisor, Bangladesh Science Museum, Ministry of ICT, Bangladesh.

## REFERENCES

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