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Dr. Muhammad Aminul Haque Akhand
Professor
Research Area Ongoing Researches
Research Area: Machine Learning, Bio-Inspired Computing Techniques and Pattern Recognition

Biography

Welcome to my personal site. I am servicing as a Professor in the Dept. of CSE, KUET. I have been graduated from this university in 1999 and then started service as a programmer in Software Company. I started research work while doing Master of Engineering in University of Fukui, Japan. After getting M. Eng. in Human and Artificial Intelligent Systems, I enrolled doctoral program in the same university and awarded Doctor of Engineering in System Design Engineering on Intelligent Information Systems in March, 2009. Now I have devoted myself to teaching and research in KUET. In this site you may find short description about my education, professional experience, research, etc.

I was **Associate Director (Academic and Research Wing)** Institute of Information and Communication Technology (IICT) . I was the manager of **Integrated Automation of KUET (IAoKUET), HEQEP Project** funded by World Bank and Govt. of Bangladesh. I have completed two years tenure period on December 31, 2019 as **Head of the CSE Department** .

I was in Japan (Oct-Dec, 2017) as a **JSPS fellow with honor of Visiting Professor at University of Fukui**. Research knowledge exchange and establishment of collaboration are the great achievements during the fellowship while visiting different laboratories of University of Fukui, Toyama Prefectural University, Tokyo Metropolitan University, Saitama University and Tohoku University.

About research, I am interested in Artificial Intelligence specifically (i) Artificial Neural Networks (ANN) and Neural Networks Ensemble (NNE), (ii) Evolutionary Computation and other Bio-inspired Computing Techniques, (iii) Swarm Intelligence and Optimization (iv) Biomedical Signal Processing and, (v) Pattern Recognition. About my research outcome, I have touched **100 publications by the end of 2017**. By 2022, I have reached **150 Publications** including 03 books, 50+ journal articles. I received **Best Paper Awards** in several international conferences. Among the books, *â€˜Deep Learning Fundamentals- A Practical Approach to Understanding Deep Learning Methods*â€™ is published by University Grants Commission (UGC), Bangladesh in 2021. Contract signing of the book was came as **News Report:** Kalerkantho , Samakal , Alokito Bangladesh , Bangla Tribune

I regularly review articles from prominent journals of IEEE, Elsevier Science, Springer and other international publishers. I am also **Editorial Board Member** of several international journals including **Journal of Computer Science (JCS)**, a Scopus Index Open Access Journal of Science Publications, USA and Australia. I have also research collaboration with several researchers from universities from Japan, UK, USA. I expect better collaborative research in coming days.

In COVID-19 period, I was involved in design and develop a Continuous Positive Airway Pressure (CPAP) for respiratory support with Mâ€™s Engineering Solution Ltd. Dhaka . The news reports on the device: Samakal , à¦à¦•à§à¦‡ à¦Ÿà§‡à¦²à¦¿à¦•à¦¿à¦¨ , à¦œà§à¦®à¦¬à¦¾à¦¡à¦¼à¦¿

On November 19, 2023, I joined as the Project Director (PD) of **Improving Computer and Software Engineering Tertiary Education Project (ICSETEP)**. ICSETEP is an ADB funded (as 100 Million USD loan) national project of 1219.80 Core Taka and University Grants Commission of Bangladesh is the implementing authority. BUET, Dhaka University, and JUST are the major stakeholders in the project through new academic building constructions, modern lab developments, and curriculum updates of CSE and modern ICT fields. Research, innovations, and some other components are open for all the universities to enhance CSE/ICT tertiary education in Bangladesh.
I praised to Almighty Allah for giving me scope to work for our beloved country Bangladesh. I am also grateful to KUET authorities, faculty members, officers, and staff for their continuous support in reaching such a position. Finally, I want support and DUA from everybody to lead ICSETEP successfully so that ADB Loan becomes most fruitful for the county.

Finally, anyone is welcome to share any research or project related idea or to do collaborative research related to my fields. Thanks a lot for visiting my site.

Education

Doctor of Engineering (Ph.D.): System Design Engineering on Intelligent Information Systems
University of Fukui, Japan,Japan(2009)
Thesis Title: **Ensembles of Diverse Neural Networks**
Master of Engineering (M. Eng.): Human and Artificial Intelligent Systems
University of Fukui, Japan,Japan(2006)
Thesis Title: **A Hybrid Sequential and Simultaneous Training Algorithm for Constructing Compact Neural Network Ensemble**
Bachelor of Science (B. Sc.)Electrical and Electronic Engineering
Khulna University of Engineering and Technology (KUET),Bangladesh(1999)Merit Position: First class (5th position),
Thesis Title: **A Software Development on Central Class Scheduling of BIT, Khulna**
Higher Secondary Certificate Examination
Shahid Smrity Adarsha College,,Nandail, Mymensingh, Bangladesh(October 1993)Merit Position: First division,
Secondary School Certificate Examination
Bangladesh Railway High School,Bhairab Bazar, Kishorgang, Bangladesh(March 1991)

Service Records

- **Professor**
  Department/Section: Computer Science and Engineering
  Khulna University of Engineering & Technology (KUET) *From 01-01-1970 to 01-01-1970*
  Responsibility:Teaching and Research
- **Associate Professor**
  Department/Section: Computer Science and Engineering
  Khulna University of Engineering & Technology (KUET) *From 01-01-1970 to 01-01-1970*
  Responsibility:Teaching and Research
- **Assistant Professor**
  Khulna University of Engineering & Technology (KUET) *From 01-01-1970 to 01-01-1970*
  Responsibility:Teaching and Research
- **Lecturer**
  Department/Section: Computer Science and Engineering
  Khulna University of Engineering & Technology (KUET) *From 01-01-2014 to 04-01-2016*
- **Programmer**
  Kernel Systems Limited *From 09-01-2016 to 09-11-2024*
- **Programmer**
  Sakaimex LTD. *From 12-01-2017 to 12-01-2022*

Research Interest

Ongoing Researches
1. Handwritten Numeral/Character Recognition using DNNs
2. Highly Constrained University Course Scheduling using Bio-inspired Methods
3. Gene Regulatory Network Inference through Swarm Intelligence
4. Solving Capacitated Vehicle Routing Problem through Swarm Intelligence

Research Area: Machine Learning, Bio-Inspired Computing Techniques and Pattern Recognition
1. Artificial Neural Networks (ANN) and Neural Networks Ensemble
2. Evolutionary Computation and Population based Methods
3. Swarm Intelligence and other Bio-inspired Computing Techniques
4. Bioinformatics and Computational Biology
5. Handwritten Numeral/Character Recognition using Deep Neural Networks(DNNs)

Publication

Books

1. 2. M. M. Islam and <. A. a. K. Murase, "A new algorithm to design neural networks ensemble", ***Dynamic Systems Approach for Embodiment and Sociality: From Ecological Psychology to Robotics, Editors: K. Murase and T. Asakura*** , International Series on Advanced Intelligence, vol. 6, 2003 .

2. M. A. H. Akhand and K. Murase, "Neural Networks Ensembles: Existing Methods and New Techniques", ***Neural Networks Ensembles: Existing Methods and New Techniques*** , ISBN:10: 10: 3838391373 & ISBN-13: 978-3838391373, M. A. H. Akhand and K. Murase, 2010 .

3. , "Gene Regulatory Network Inference: Information Theoretic and Model Based Approaches", ***Gene Regulatory Network Inference: Information Theoretic and Model Based Approaches*** , ISBN:ISBN-10: 3330344059, ISBN-13: 978-3-330-34405-1 & EAN: 9783330344051, LAP LAMBERT Academic Publishing, 2017 .

4. , "Deep Learning Fundamentals- A Practical Approach to Understanding Deep Learning Methods", ***Deep Learning Fundamentals- A Practical Approach to Understanding Deep Learning Methods*** , ISBN:978-984-35-0812-6, UGC, Bangladesh, 2021 .

Journals

12. S. I. Hossain, J. d. G. d. Herve, M. S. Hassan, D. Martineau, E. PetrosyanV. Corbin, Beytout, I. Lebert, J. Durand,I. Carravieri, A. B. Brun-Jacob, P. F. Frey-Klett, E. Baux, C. Cazorla, C. Eldin, Y. Hansmann, S. P. Patrat-Delon, T. Prazuck, A. Raffetin, P. Tattevin, G. V. Vourc'h, O. Lesens, and E. M. Nguifo, "Exploring convolutional neural networks with transfer learning for diagnosing Lyme disease from skin lesion images," ***Computer Methods and Programs in Biomedicine*** , Elsevier BV, DOI:10.1016/j.cmpb.2022.106624, 2022 .

11. <. A. H. A. Akhand and a. K. Murase, "Ensembles of Neural Networks based on the Alteration of Input Feature Values," ***International Journal of Neural Systems*** , vol. 22, no.1, pp.77-87, 2012 .

10. <. A. H. A. Akhand and P. C. S. a. K. Murase, "Hybrid Ensemble Construction with Selected Neural Networks," ***Journal of Advanced Computation Intelligence and Intelligent Informatics (JACIII)*** , vol. 15, no.6, pp.652-661, 2011 .

8. M. R. Islam, M. A. H. Akhand and K. Murase, "A Precise Evolutionary Approach to Solve Multivariable Functional Optimization," ***GSTF International Journal on Computing (JoC)*** , vol. 1, no.2, 2011 .

7. M. A. H. Akhand, P. C. Shill and K. Murase, "Ensembles of Artificial Example based Neural Networks," ***Journal of Computers (JCP)*** , Academy Publisher, vol. 5, no.12, DOI:10.4304/jcp.5.12.1819-1827, 2010 .

6. M. A. H. Akhand and K. Murase, "Neural Network Ensemble Construction Fusing Multiple Popular Methods," ***IAENG International Journal of Computer Science*** , vol. 37, no.4, 2010 .

5. M. Akhand, M. M. Islam and K. Murase, "Progressive interactive training: A sequential neural network ensemble learning method," ***Neurocomputing*** , Elsevier BV, vol. 73, DOI:10.1016/j.neucom.2009.09.001, 2009 .

4. M. A. H. Akhand, M. M. Islam and K. Murase, "A Comparative Study of Data Sampling Techniques for Constructing Neural Network Ensembles," ***International Journal of Neural Systems*** , vol. 19, no.2, pp.67-89, 2009 .

3. M. Hyder, M. M. Islam, M. A. H. Akhandand K. Murase, "Symmetry Axis based Object Recognition under Translation, Rotation and

Scaling," ***International Journal of Neural Systems*** , vol. 19, no.1, pp.25-42, 2009 .

2. M. A. H. Akhand and K. Murase, "A Minimal Neural Network Ensemble Construction Method: A Constructive Approach," ***Journal of Advanced Computation Intelligence and Intelligent Informatics (JACIII)*** , vol. 11, no.6, 2007 .

1. M. A. H. Akhand, M. M. Islam and K. Murase, "A Hybrid Sequential and Simultaneous Training Algorithm for Constructing Neural Network Ensembles," ***WSEAS Transactions on Information Science and Applications*** , vol. 3, 2006 .

Conference

2. M. M. Islam, M. A. H. Akhand and K. Murase, "A New Algorithm for Training Cooperative Neural Network Ensembles," ***2ndInternational Conference on Electrical and Computer Engineering (ICECE2002)***, December 26-28, 2002 .

1. M. M. Islam, M. A. H. Akhand and K. Murase, "A New Algorithm to Design Neural Network Ensembles," ***3rd Intational Symposium on Human and Artificial Intelligence Systems (Dynamic Systems Approach for Embodiment and Sociality)***, December 6-7, 2002 .