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## Dr. Kaled Masukur Rahman

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### Professor, Dept. of EEE & Head of Dept.

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- Current Position and Address
- Educational Background
- Employment History
- Publications
- Current Responsibilities:
- Awards, Membership and Other Experiences
- Research Interests
- Project Supervised
- Publication

### Current Position and Address

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#### Professor

Department of Electrical & Electronic Engineering  
United International University,  
United City, Madani Avenue, Badda,Dhaka,  
Dhaka 1212, Bangladesh. Phone: 01916201234  
E-mail: masuk@eee.uiu.ac.bd

### Educational Background

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1. **Ph.D.** Institution: City University of Hong Kong, Kowloon, Hong Kong

Discipline: Electronic Engineering Year: 2007 1. **B.Sc. Engineering** Institution: Bangladesh University of Engineering and Technology, Dhaka-1000, Bangladesh Discipline: Electrical and Electronic Engineering Year: 2001

### Employment History

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From: Oct, 2021 To date

Employer: United International University

Position Held: Professor, Department Of Electrical And Electronic Engineering. From: Nov, 2014 To: Sept, 2021

Employer: United International University

Position Held: Associate Professor, Department Of Electrical And Electronic Engineering. From: June, 2009 To: Nov, 2014

Employer: United International University

Position Held: Assistant Professor, Department Of Electrical And Electronic Engineering. From: Sept, 2008 To: May, 2009

Employer: Dept. Of Manufacturing Engineering And Engineering Management, City University Of Hong Kong

Position Held: Research Assistant From: Sept, 2007 To: July, 2008

Employer: Dept. Of Electronic Engineering, City University Of Hong Kong

Position Held: Research Fellow From: July, 2007 To: Aug, 2007

Employer: Dept. Of Electronic Engineering, City University Of Hong Kong

Position Held: Research Assistant From: June, 2005 To: April, 2007  
Employer: Dept. Of Electronic Engineering, City University Of Hong Kong  
Position Held: Research Assistant From: : Jan, 2002 To: Jun, 2003  
Employer: Dept. Of Electronic Engineering, City University Of Hong Kong  
Position Held: Research Assistant

## Publications

**Journals:** [1] M. K. M. Rahman, W. P. Yang, T. W. S. Chow and Sitao Wu, "A Flexible Multi-Layer Self-Organizing Map for Generic Processing of Tree-Structured Data," *Pattern Recognition*, vol. 40, no. 5, pp. 1406-1424, 2007. [2] T. W. S. Chow, M. K. M. Rahman, "Face Matching in Large Database by Self-Organizing Maps," *Neural Processing Letters*, vol. 23, no. 3, pp. 305-323, 2006. [3] T. W. S. Chow and M. K. M. Rahman, "A New Image Classification Technique using Tree-Structured Regional Features," *Neurocomputing*, vol. 70, no. 4-6, pp. 1040-1050, 2007. [4] T. W. S. Chow, M. K. M. Rahman and Sitao Wu, "Content Based Image Retrieval by Using Tree-Structured Features and Multi-Layer SOM," *Pattern Analysis and Applications*, vol. 9, no. 1, pp. 1-20, 2006. [5] T. W. S. Chow and M. K. M. Rahman, "Multi-Layer SOM with Tree Structured Data for Efficient Document Retrieval and Plagiarism Detection," *IEEE Transactions on Neural Networks*, vol. 20, no. 9, pp. 1385-1402, Sept. 2009. [6] M. K. M. Rahman and T. W. S. Chow, "Content-based Hierarchical Document Organization using Multi-Layer Hybrid Network and Tree-Structured Features," *Expert Systems With Applications*, vol. 37, no. 4, pp. 2874-2881, 2010. DOI=10.1016/j.eswa.2009.09.002 <http://dx.doi.org/10.1016/j.eswa.2009.09.002> [7] S. Wu, M. K. M. Rahman and T. W. S. Chow, "Content-based Image Retrieval using Growing Hierarchical Self-Organizing Quadtree Map," *Pattern Recognition*, vol. 38, no. 5, pp. 707-722, 2005. [8] H. Zhang, T. W. S. Chow, and M. K. M. Rahman, "A New Dual Wing Harmonium Model for Document Retrieval," *Pattern Recognition*, vol. 42, no. 11, pp. 2950-2960, November 2009. DOI=10.1016/j.patcog.2009.03.021 <http://dx.doi.org/10.1016/j.patcog.2009.03.021> [9] T. W. S. Chow, H. Zhang, and M. K. M. Rahman, "A New Document Representation Using Term Frequency and Vectorized Graph Connectionists with Application to Document Retrieval," *Expert Systems With Applications*, vol. 36, no. 10, pp. 12023-12035, December 2009. DOI=10.1016/j.eswa.2009.03.008 <http://dx.doi.org/10.1016/j.eswa.2009.03.008> [10] H. Zhang, T. W. S. Chow, and M. K. M. Rahman, "A novel dual wing harmonium model aided by 2-D wavelet transform subbands for document data mining," *Expert Systems With Applications*, vol. 37, no. 6, pp. 4403-4412, June 2010. DOI=10.1016/j.eswa.2009.11.088 <http://dx.doi.org/10.1016/j.eswa.2009.11.088> [11] M. K. M. Rahman and M. A. M. Joadder, "A Review on the Components of EEG-based Motor Imagery Classification with Quantitative Comparison," *Application and Theory of Computer Technology*, [S.l.], vol. 2, no. 2, pp. 1-15, mar. 2017. ISSN 2514-1694. DOI: <https://doi.org/10.22496/atct20170122133> [12] M. K. M. Rahman, "SOM Aided Visualization and Retrieval of Flower Database Using Tree-Structured Representation," *International Journal of Control and Automation*, vol. 11, no. 5, pp. 143-162, 2018. DOI= [dx.doi.org/10.14257/ijca.2018.11.5.13](https://doi.org/10.14257/ijca.2018.11.5.13) [13] M. K. M. Rahman and M. A. M. Joadder, "A space-frequency localized approach of spatial filtering for motor imagery classification," *Health Information Science and Systems*, vol. 8, no. 15, march 2020. [14] M. K. M. Rahman and Tohfa Haque, "Classification of motor imagery using a time-localised approach," *Journal of Medical Engineering & Technology*, pp. 1-14, April, 2021. DOI: [doi.org/10.1080/03091902.2021.1906966](https://doi.org/10.1080/03091902.2021.1906966) [15] M. K. M. Rahman, Md. Omer Sadek Bhuiyan and Md. A. Mannan Joadeer, "Progressive Fusion of Feature Sets for Optimal Classification of MI Signal," *International Journal of Biomedical Engineering and Technology*, vol. 36, no. 4, pp. 375-392, 2021. [16] M. K. M. Rahman, Ainul Anam Shahjamal Khan and Tasmeea Rahman, "Hierarchical Fusion in Feature and Decision Space for Detection of Valvular Heart Disease using PCG Signal," *International Journal of Biomedical Engineering and Technology*, vol. 40, no. 2, pp. 184-204, 2022. [17] M. K. M. Rahman & H. M. Tanvir Shuvo, "An improved MI recognition by localising feature extraction in both frequency and time domains," *Computer Methods in Biomechanics and Biomedical Engineering: Imaging & Visualization*, 23:1-3, Mar 2023, doi: [10.1080/21681163.2023.2192831](https://doi.org/10.1080/21681163.2023.2192831). [18] M. K. M. Rahman, "Motor Fault Detection using Current and Sound: A comparative Study," *International Journal of Automation and Smart Technology*, vol. 11, no. 1, 2021, doi: <https://doi.org/10.5875/ausmt.v11i1.2151>. **Conference :** [1] M.K.M. Rahman, T. Azam, and S.K. Saha, "Motor fault detection using vibration patterns," *International Conference on Electrical and Computer Engineering (ICECE)*, 2010, vol., no., pp. 486-489, 18-20 Dec. 2010. doi: [10.1109/ICELCE.2010.5700735](https://doi.org/10.1109/ICELCE.2010.5700735) [2] M. K. M. Rahman, T. W. S. Chow, and Siu-Yeung Cho, "A segmentation based approach for shape recovery from multi-color images," *11th International Conference on Control Automation Robotics & Vision (ICARCV)*, 2010, vol., no., pp. 659-663, 7-10 Dec. 2010. doi: [10.1109/ICARCV.2010.5707932](https://doi.org/10.1109/ICARCV.2010.5707932) [3] M.K.M. Rahman, "Maximum Power Point Tracking using artificial intelligence," *Developments in Renewable Energy Technology (ICDRET)*, 2014 3rd International Conference on the , vol., no., pp. 1, 4, 29-31 May 2014. doi: [10.1109/ICDRET.2014.6861678](https://doi.org/10.1109/ICDRET.2014.6861678) [4] M.K.M. Rahman and T. W. Chow, "Image retrieval using an improved similarity measure: SRIC Similarity with Region Importance and Consistency," *In Proc. of 17th International Conference on Computer and Information Technology (ICCIT)*, 2014, pp. 336-343, 22-23 Dec. 2014. doi: [10.1109/ICCITech.2014.7073066](https://doi.org/10.1109/ICCITech.2014.7073066) [5] M.K.M. Rahman and A. J. Ahmed, "Detection of heart condition by time and frequency based template," *In Proc. Of 17th International Conference on Computer and Information Technology (ICCIT)*, 2014, pp. 406-412, 22-23 Dec. 2014. doi: [10.1109/ICCITech.2014.7073145](https://doi.org/10.1109/ICCITech.2014.7073145) [6] M. A. M. Joadder and M. K. M. Rahman, "Classification of Motor Imagery signal using wavelet decomposition: A study for optimum parameter settings," *In proc. of International Conference on Medical Engineering, Health Informatics and Technology (MediTec)*, Dhaka, 2016, pp.

1-6. doi: 10.1109/MEDITEC.2016.7835388 [7] M. K. M. Rahman, M. A. M. Joadder and T. A. Ashique, "Seizure detection system: A comparative study on features and fusions," In proc. of International Conference on Medical Engineering, Health Informatics and Technology (MediTec), Dhaka, 2016, pp. 1-6. doi: 10.1109/MEDITEC.2016.7835389 **Book Chapter:** [1] T.W.S. Chow, M. K. M. Rahman, "Extensions of Self-Organizing Maps to Handle Structured Data," *Neurocomputing Research Development*, ISBN: 978-1-60021-931-3, Chapter 4, Editor: Hugo A. Svensson, pp. 107-139, Nova Science Publishers, Inc. URL: [https://www.novapublishers.com/catalog/product\\_info.php?products\\_id=5977](https://www.novapublishers.com/catalog/product_info.php?products_id=5977) PhD Thesis DOI\*\* : <http://lbms03.cityu.edu.hk/theses/ftt/phd-ee-b22181349f.pdf>

Current Responsibilities:

- 1. Teaching
- 2. Research
- 3. OBE coordinator of EEE dept.
- 4. Counselor of IEEE student branch at UIU
- 5. Convener of RPTLC committee
- 6. Lab facility overseer
- 7. Technical co-chair of ICDRET conference
- 8. Head of EEE dept.

Awards, Membership and Other Experiences

**Postdoctoral fellowship** : Served as Research Fellow in Dept. Of Electronic Engineering, City University of Hong Kong from Sept, 2007 to July, 2008 **Best Paper Award:** M.K.M. Rahman, "Maximum Power Point Tracking using artificial intelligence," *3rd International Conference on the Developments in Renewable Energy Technology (ICDRET), 2014*, vol., no., pp.1,4, 29-31 May 2014. **Membership of Scientific and Professional Societies:** Member , IEEE, Member No.: 93355352 **Awarded research grants-1:** IAR, UIU grant no:- Grant-UIU-RG-161013 (4 lacs) Name: Development of novel features of EEG signal in spatial, spectral and temporal domain, and application of their fusion for BCI Publication: 4 journal and conference papers. **Awarded research grants-2:** IAR, UIU grant no:- UIU/IAR/02/2019-20/SE/11 (5 lacs) Name: Integration of multi-modal data focused on time, frequency and space to create localized and high-level features for improved BCI Publication: 2 journal papers + 1 ongoing. **Awarded research grants-3:** IAR, UIU grant no:- (awarded in 2024, not assigned yet) (5 lacs) Yet to start. **Other Experiences** : 1. Served as Undergraduate Program-Coordinator for EEE department of United International University (from 2012 till 2018). 2. Involved in the development of OBE based curriculum for B.Sc. in EEE. 3. Served as a member of BAETE team in evaluating of EEE program for accreditation in Bangladesh. 4. Involved in testing of Solar Home Systems (SHS) equipments under Center of Energy Research (CER), United International University, Dhaka. 5. Involved with IQAC team for development and self-assessment of EEE program. Participated in many workshops/trainings in the area of curriculum development and Outcome Based Education (OBE).

Research Interests

- 1. Pattern Recognition
- 2. Biomedical Signal Processing
- 3. Feature Extraction
- 4. Brain Computer Interface
- 5. Self-Organizing Maps
- 6. Tree-Structured Data
- 7. Image Retrieval & Classification.

Project Supervised

Project/Thesis Supervised at Undergraduate Level		
SL	Project Name	#Publication
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1	Motor Fault Detection Using Vibration Signal and Neural Network	1
2	Automatic Diagnosis of Heart Valve	1
3	Artificial Intelligence (AI) in Power System	"
4	Motor Fault Detection by Artificial Intelligence Based on Current and Sound	1
5	Automatic Heart Disease Detection from ECG	"
6	Maximum Power Point Tracking Using Artificial Intelligence	1
7	Automatic Extraction of Battery Characteristics	"
8	Brain Computer Interface using EEG	"
9	Disease diagnosis from Heart rate variability	"
10	Data Visualization and Analysis by SOM (Self-Organizing Map)	"

- 11 | Detection of Valvular Heart Disease Using PCG Signal | 1
- 12 | Data Visualization and Analysis by SOM on human characteristics and ECG | 1
- 13 | Design and Implementation of a MPPT Solar Charge Controller | 1
- 14 | An Improved Epileptic-Seizure Detection Technique Using Feature Fusion | 1
- 15 | Detection of Motor Imagery for EEG based BCI Application | 1
- 16 | Classification of Directionally Modulated MEG Signal | 1
- 17 | Estimation of State of Charge using Artificial Intelligence | 1
- 18 | Mind Controlled Vehicle using NeuroSky MindWave Moblie | 1
- 19 | Self Balancing Robot using PID Controller | 1
- 20 | A Prototype of Heavyweight Carrying Robot for Garments Industry in Bangladesh | 1
- 21 | Digitization of Farming | 1

## Publication

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## Journal Papers

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2021## Classification of motor imagery using a time-localised approach Publication: Journal of Medical Engineering & Technology Author List: M. K. M. Rahman, Tohfa Haque

## Progressive Fusion of Feature Sets for Optimal Classification of MI Signal

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Publication: International Journal of Biomedical Engineering and Technology Author List: M. K. M. Rahman, Md. A. Mannan Joadder, Md. Omer Sadek Bhuiyan

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## Departments

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- B.Sc in Data Science
- Dept. of EEE
- Dept. of Civil Engineering
- Dept. of Pharmacy
- Dept. of English
- Dept. of EDS
- Dept. of MSJ
- SoBE (BBA, AIS, MBA, EMBA)
- Dept. of Economics
- Dept. of BGE

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