<u>Contact Address</u>

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Department of Information and Communication Engineering
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OBJECTIVES

I want to take the challenges of job hazard and want to enrich and expose the work inside. I would like to welcome the chance to work as a part of a dynamic working team where I believe that I could make a significant contribution while developing my skills yet further. I am eager to develop a professional career by securing research position with a reputable and progressive organization that supports a learning environment enabling me to refine the skills I have acquired through formal learning, research and practical experiences.

PRESENT STATUS

Academic   **Associate Professor** (From 31 August 2019 to present)
Department of Information and Communication Technology
Islamic University, Kushtia, Bangladesh

EXPERIENCES

Teaching   **Assistant Professor** (From 28 March 2012 to 30 August 2019)
Department of Information and Communication Engineering
Islamic University, Kushtia, Bangladesh

Lecturer (From 18 April 2010 to 27 March 2012)
Department of Information and Communication Engineering
Islamic University, Kushtia, Bangladesh

Lecturer (From 08 March 2008 to 17 April 2010)
Department of Computer Science and Telecommunication Engineering
Faculty of Engineering
Noakhali Science and Technology University, Noakhali, Bangladesh.

System Administrator and Full Time Teacher (From 07 April 2007 to 7 March 2008)
Information Technology,
TAFE, South Western Sydney Institute(Govt.),Australia,
Leadership University College, Bangladesh.

Awards   **Best Research Paper and Presentation Awards, 2018**
5th Post Graduate Academic Forum, Among all Laboratories of National Engineering Laboratory of Speech and Natural Language Processing
Sponsored by iFlyTek
University of Science and Technology of China, Hefei, Anhui, China

CAS-TWAS Scholarship 2015
Provided by China Academy of Sciences and World Academy of Sciences, UNESCO, UN, Brazil, Italy

Reviewer   Signal Processing (SCI Indexed, Impact Factor: 4.086)
IEEE Wireless Communications Letters (SCI Indexed, Impact Factor: 6.74)
IEEE Transactions on Vehicular Technology (SCI Indexed, IF: 5.978)

IEEE Transactions on Geoscience and Remote Sensing (TGRS) (IF: 5.6)
IEEE Transactions on Signal Processing (SCI Indexed, IF: 4.931)
IEEE Systems Journal (SCI Indexed, Impact Factor: 4.463)
IEEE Access (SCI Indexed, Impact Factor: 4.098)
IEEE Signal Processing Letters (SCI Indexed, Impact Factor: 3.105)
IEEE Sensors Letters (SCI Indexed, Impact Factor: 2.358)
IET Radar, Sonar and Navigation (SCI Indexed, Impact Factor: 2.51)
IET Signal Processing (SCI Indexed, Impact Factor: 1.692)
Electronics Letter (SCI Indexed, Impact Factor: 1.316)
Electronics and Telecommunications Research Institute Journal (IF: 1.094)
Mathematical Problems in Engineering (SCI Indexed, Impact Factor: 1.009)
International Journal of Aerospace Engineering **(SCI Indexed, IF: 1.23)**

Project Conducting	**Team Member** **HEQEP** Project (AIF-UGC) Information Technology Research and Resource center Islamic University, Kushtia, Bangladesh
	Committee Member **Technical Committee** Online Application Process, Admission 2012 Islamic University, Kushtia, Bangladesh
	Committee Member **Advisory Committee** Online Application Process, Admission 2011 Islamic University, Kushtia, Bangladesh
	Committee Member **Implementation Committee** Online Application Process, Admission 2011 Islamic University, Kushtia, Bangladesh
Technical	**Member** University Web-page designing and Automation System Noakhali Science and Technology University, Bangladesh
	Advisor Central On-line library Automation systems. Noakhali Science and Technology University, Bangladesh
Academic	**Faculty Member** Faculty of Science and Technology Islamic University, Kushtia, Bangladesh
	Faculty Member Faculty of Engineering Noakhali Science and Tecnology University, Bangladesh
Administrative	**Assistant Director** Computer Center Islamic University, Kushtia
	Asst. Provost Khaleda Zia Hall Islamic University, Kushtia
	Proctor (at NSTU) Noakhali Science and Technology University.

	Provost (Acting) (at NSTU)
	Hazrat Bibi Khadija Hall
	Noakhali Science and Technology University.
	PUO
	Bangladesh National Cadet Core
	Noakhali Science and Technology University.
	Convener (at NSTU)
	National days observance committee
Committee Member	**Planning Committee Member**
	Department of ICE, IU
	Department Of CSTE, NSTU
	Convener (at NSTU)
	Industrial Attachment and Internship Committee
	Computer Science and Telecommunication Engineering.
Extra Curricula	**Moderator** (at NSTU)
	Debate Society
	Noakhali Science and Technology University
	Moderator
	Bangladesh Open Source Networking
	Cultural Member
	Association of Universities of Bangladesh.
	Advisor
	Prothom-Alo Bandhu-shova.

EDUCATIONS

- **PhD in Information & Communication Engineering.**
  - ➢ **Institution:** Institute of Statistical Signal Processing, National Engineering Laboratory of Speech and Language Information Processing. University of Science and Technology of China (80th in world ranking 2019)
  - ➢ **Research Field:** Signal and Information Processing
  - ➢ **Passing Year:** 2019
  - ➢ **Grade:** 3.88 out of 4
  - ➢ **Education Medium:** English
  - ➢ **Scholarship awarded:** CAS-TWAS President's Fellowship Program 2015

- **M. Sc. in Information & Communication Engineering.**
  - ➢ **Institution:** Islamic University, Kushtia, Bangladesh.
  - ➢ **Passing Year:** 2005
  - ➢ **Result:** First Class First
  - ➢ **Grade:** 4 out of 4 (Evaluated by WES according to US standard)
  - ➢ **Education Medium:** English

- **B.Sc. (Hon's) in Information & Communication Engineering.**
  - **Institution:** Islamic University, Kushtia, Bangladesh.
  - **Passing Year:** 2004
  - **Result:** **First Class First**
  - **Education Medium:** English

- **H.S.C.**
  - **Institution:** Rajshahi New Govt. Degree College, Rajshahi
  - **Passing Year:** 2000
  - **Result:** 1st Division (Star)
  - **Marks:** **800(80%)**
  - **Group:** Science

- **S.S.C.**
  - **Institution:** Rajshahi Collegiate School, Rajshahi.
  - **Passing Year:** 1998
  - **Result:** 1st Division (Star)
  - **Marks:** **899 (89.9%)**
  - **Group:** Science.

PROJECT (ACADEMIC)

- University Central Library Automation using Visual Basic and SQL.
- Hall management System and Library management System.
- Online Result Publishing using PHP/MYSQL and Network Security.
- Software Development for Simulation of a lost call Telephone System.
- System of simulation for cell-Phone using JAVA language.
- "Best suitable channel equalization algorithm for wireless, optical and smart antenna systems to mitigate echo problem".

COMPUTER SKILLS

- ❖ Programming with C, C++, C#, Visual Basic & C++, MatLab, Python, Pascal, Java, HTML, XML, Programmable Logic control, Prolog etc..
- ❖ Database Design with Oracle, Developer, ASP.NET, PHP, & My SQL.
- ❖ Software and Hardware troubleshooting, Maintenance.
- ❖ Expertise on LAN, WAN, ISP Setup on Linux Platform, DNS, DHCP, Networking Simulation, Broadband Internet Connection Setup, CCNA.
- ❖ Operating System: Windows and Exchange Server, Windows and Linux.
- ❖ Office Productivity Tools, MS Access and Internet Utilities, Photoshop, Illustrator.

LANGUAGES

English: Well in Reading, Writing, Speaking (Above 80% marks in English in S.S.C.)

Chinese: Well in speaking, moderated in writing and reading.

RESEARCH CONTRIBUTION

The main contribution of my research was to mitigate the challenge of increasing the array aperture lengths from a limited number of array elements to achieve the highest possible resolution.

An optimal coprime structure is designed which is named as VECADS to form a larger size continuous virtual array using only the basic configuration of coprime array by concurrently exploiting the difference and sum co-array without the need of additional array elements or frequencies at low-cost.

An optimal new augmentation technique with Translocated and Axis Rotated Compressed Subarrays (CATARCS) is designed on the coprime array concept to enhance the resolution of DOA estimation as well as the DOF. These outputs are obtained by a rank-incremented iterative power factorization interpolation technique. Larger number of degrees of freedom is achieved by extending the autocorrelation matrix applying Iterative Power Factorization algorithm for interpolation; first time used successfully in this work. IPF has promising potential for practical matrix-recovery problems.

A novel array structure exploiting coprime arrays is proposed which can be very proficient to determine the number of consecutive lags in proportion with the number of array elements. The proposed method comprises novel array structure by configuring three subarrays positioned in alignment with some prescribed values and the final appended one more subarray is to exploit fourth order difference co-array. In this method, full co-array lags have been used by extracting all the lags in first operation of second order difference co-array by applying NNM to interpolate the holes.

A novel configuration of array structure with three linear coprime subarrays is designed to propose the ability of achieving the maximum degrees of freedom than-the-state-of-the-art which could be very prone for high resolution DOA estimation. Afterwards, the previous structure was modified by appending one more subarray with exploitation of fourth order difference co-array. By adding fewer number of sensors in subarray 4 larger lags can be achieved which provides us facilities of setting up subarray 4 in limited space which could be very fruitful to cope up with space and cost optimization in special cases where these arise as a big concern.

PUBLICATIONS

International Journal

1. **T. H. A. Mahmud**, Z. Ye, K. Shabir, R. Zheng and M. S. Islam, "Off-Grid DOA Estimation Aiding Virtual Extension of Coprime Arrays Exploiting Fourth Order Difference Co-Array With Interpolation," in *IEEE Access* (**IF: 4.098**), vol. 6, pp. 46097-46109, 14 August 2018. doi: 10.1109/ACCESS.2018.2865419, [SCI: GU3AB][EI: 20183405722383].

2. **Tarek Hasan AL MAHMUD**, Zhongfu YE, Kashif SHABIR, Yawar Ali SHEIKH, DOA Estimation of Quasi-Stationary Signals Exploiting Virtual Extension of Coprime Array Imbibing Difference and Sum Co-Array, IEICE Transactions on Communications (**IF: 1.090**), 2018, Volume E101.B, Issue 8, Pages 1876-1883, August 01, 2018, https://doi.org/10.1587/transcom.2017EBP3375, [SCI: GT0QL].

3. **T. H. A. Mahmud**, K. Shabir, R. Zheng and Z. Ye, "Interpolating Coprime Arrays With Translocated and Axis Rotated Compressed Subarrays by Iterative Power Factorization for DOA Estimation," in IEEE Access (**IF: 4.098**), vol. 6, pp. 16445-16453, 7 February 2018. doi: 10.1109/ACCESS.2018.2803050, [SCI: GC9GF] [EI: 20180704790505].

4. Hossain, M.I., **Al Mahmud, T.H.**, Islam, M.S. et al. Dual transform based joint learning single channel speech separation using generative

joint dictionary learning. Multimed Tools Appl, (2022), (**IF: 2.757**), 02 April 2022. https://doi.org/10.1007/s11042-022-12816-0

5. Kashif Shabir, **Tarek Hasan Al Mahmud,** Rui Zheng and Zhongfu Ye, "Generalized Super-resolution DOA Estimation Array Configurations' Design Exploiting Sparsity in Coprime Arrays". Circuits, Systems & Signal Processing (CSSP) (**IF: 1.922**), pp. 1-16, 04 March 2019. doi: https://doi.org/10.1007/s00034-019-01078-1.

6. Rui Zheng, Xu Xu, Zhongfu Ye, **Tarek Hasan Al Mahmud**, Jisheng Dai, Kashif Shabir, Sparse Bayesian learning for off-grid DOA estimation with Gaussian mixture priors when both circular and non-circular sources coexist, Signal Processing (**IF: 4.086**), Volume 161, August, 2019, Pages 124-135, https://doi.org/10.1016/j.sigpro.2019.03.021.

7. Kashif Shabir, **Tarek Hasan Al Mahmud**, Rui Zheng, Zhongfu Ye. A low-complexity RARE-based 2-D DOA estimation algorithm for a mixture of circular and strictly noncircular sources. Turkish Journal of Electrical Engineering & Computer Sciences, (**IF: 0.625**), 26(5), pp. 2234-2245, 28 September 2018. [EI: 20184105930101].

8. Islam, M.S.; **Al Mahmud, T.H.**; Khan, W.U.; Ye, Z. Supervised Single Channel Speech Enhancement Based on Dual-Tree Complex Wavelet Transforms and Nonnegative Matrix Factorization Using the Joint Learning Process and Subband Smooth Ratio Mask. Electronics (**IF: 2.110**), 22 March 2019, 8(3), 353. doi:10.3390/electronics8030353.

9. Islam, M.S., **Al Mahmud, T.H.**, Khan, W.U. et al. "Supervised Single Channel Speech Enhancement Based on Stationary Wavelet Transforms and Non-negative Matrix Factorization with Concatenated Framing Process and Subband Smooth Ratio Mask", J Sign Process Syst. (**IF: 1.035**) 2019.

10. **Tarek Hasan Al Mahmud**, Kashif Shabir, Rui Zheng, Zhongfu Ye and Md Shohidul Islam, "A Novel Array Structure with Higher DOF comprising Triplet Coprime Arrays for High Resolution DOA Estimation". Submission under process. Digital Signal Processing Journal (**IF: 2.241**).

11. Kashif Shabir, Zhongfu Ye, **Tarek Hasan Al Mahmud**, Yawar Ali Sheikh and Rizwan Ullah, "Efficient Underdetermined DOA Estimation Algorithm by Extending Covariance Matrix Based on Non-Circularity using Coprime Array", Communications on Applied Electronics (CAE), Vol.7, No.1, Pages 1-5, May. 2017.

12. Yawar A. Sheikh, Zhongfu Ye, Kashif Shabir, **Tarek Hasan Al Mahmud**, Rizwan Ullah, 2-D Near Field Source Localization by Evolutionary Technique Exploiting the L-Type Geometry of Sensor Array, Circulation in Computer Science(CCS), Vol.2, No.3, Pages 11-16, Apr. 2017.

13. **Tarek Hasan-Al-Mahmud**, Dr. M. Mahbubur Rahman, Sumon Kumar Debnath, "Performance Analysis of Best suited Adaptive Equalization Algorithm for Optical Communication" Published in Journal of Telecommunications (ISSN 2042-8839), Volume 1, Issue 2, PP. 35-41, Mrach 2010.

14. Md. Mainul Islam Mamun, **Tarek Hasan-Al-Mahmud**, Sumon Kumar Debnath and Md. Zahidul Islam, (2010) "Analyzing the Low Power Wireless Links for Wireless Sensor Networks", Journal of Telecommunications (ISSN 2042-8839), Volume 1, Issue 1, PP. 123-126, February 2010.

15. Dr. M. Mahbubur Rahman, Md. Khairul Islam, **Tarek Hassan-Al-Mahmud**, A. R. Mahmud "Performance Analysis of Downlink Power Control in WCDMA System" International Journal of Scientific & Engineering Research, ISSN 2229-5518, Volume 3, Issue 8, August-2012.

16. Dr. M. Mahbubur Rahman, Md. Amzad Hossain, **Tarek Hasan-Al Mahmud** and A. R. Mahmud "Performance Analysis of Channel Assignment Scheme in Wimax" IOSR Journal of Electronics and Communication Engineering (IOSRJECE) ISSN : 2278-2834 Volume 1, Issue 6, PP 24-30, July-Aug 2012.

Domestic Journal

17. Paresh Chandra Barman, **Tarek Hasan-Al-Mahmud**, Bikash Chandra Singh. Classification and Identification of Meaningful Gene Using Non-Negative Matrix Factorization. Journal of Applied Science and Technology, Vol. 8,No.1, June 2012, pp 57-64,ISSN 2218-481X.

18. **Tarek Hasan-Al-Mahmud**, Ashadun Nobi, M. Zamil Sultan, M. Mahbubur Rahman. Improving Stability, Steady-State Error Performance And Convergence Rate In Optical Communication Implementing AFS-MDFE Using ADG And TD Algorithm. Journal of Green World Foundation, ISSN 2076-3972, Inst.eng.tech. 1(1):21-29 January, 2010.

19. Sumon Kumar Debnath, **Tarek Hasan-Al-Mahmud**, "Efficient Group Communication in Mobile Ad-hoc Network. Published in Journal of Green World Foundation, ISSN 2076-3972, Inst.eng.tech. 1(1):21-29 January, 2010

20. Ashadun Nobi, **Tarek Hasan-Al-Mahmud**, "A fast monte carlo simulation for site percolation using hoshen-kopelman algorithm and canal search algorithm". published in Computer Science and Engineering Research Journal(CSERJ), Vol. 05 (2008). ISSN: 1990-4010 Chittagong University of Engineering and Technology.(CUET)

21. A. Nobi and **T. Mahmud**, "Determination of Fractal Dimension of the Stochastic Cantor Set Using Monte-Carlo Simulation and a Comparison with Analytical Solution". Accepted for Journal of Computer Science, Volume 2, Number 1 & 2, December 2008. IBAIS University.

22. A. Nobi and **T. Mahmud**, "Determination of Fractal Dimension of the Random Stochastic Cantor Set Using Monte-Carlo Simulation and a Comparison with Analytical Solution". Accepted for Official Journal of Bangladesh Physical Society, ISSN 1816-1081.

23. M. Zamil Sultan, Dr. Anis Ahmed, Ashadun Nobi, and **Tarek Hasan**, Analysis of the Characteristics of Triangular Corrugated Optical Waveguide, Published in Journal of Green World Foundation, ISSN 2076-3972, Inst.eng.tech. 1(1):9-15 January, 2010.

Conference Paper

24. **Tarek Hasan-Al-Mahmud**, Dr. M. Mahbubur Rahman "Performance Analysis of AFS-MDFE with ADG and TD Algorithm for the Equalization in Optical Communication". National Conference on Communication and Information Security (NCCIS). Daffodil University, Dhaka, Bangladesh. 23-24 November 2007, Bangladesh. Published as conference proceedings with 6 pages (from 49 to 54),

<table>
<tr><td></td><td>25.</td><td>Design and Simulation of OFDM and Analyzing the Performances Comparing with QAM systems. **Tarek Hasan-Al-Mahmud**, M. Mahbubur Rahman and Tapan Kumar Godder National Conference on Electronics, Information and Telecommunication(NCEIT),Bangladesh Electronics Society (BES), 29-30, June,2007 Bangladesh page no. 122 ISBN-984-300-000645-7</td></tr>
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Books	26.	"Information and Communication Technology" by **Tarek Hasan-Al-Mahmud** and Jashim Uddin. ***Bangla enlarged version text & reference book*** of Information and Communication Technology for eleventh and twelfth classes approved by National Curriculum and Text Book Board of Government.
	27.	"Information and Communication Technology" by **Tarek Hasan-Al-Mahmud** and Jashim Uddin. ***Bangla version Lab book*** of Information and Communication Technology for eleventh and twelfth classes approved by National Curriculum and Text Book Board of Government.
	28.	"Information and Communication Technology" by **Tarek Hasan-Al-Mahmud** and Jashim Uddin. ***English version textbook*** of Information and Communication Technology for eleventh and twelfth classes approved by National Curriculum and Text Book Board of Government.
	29.	"Information and Communication Technology" by Jashim Uddin, **Tarek Hasan-Al-Mahmud** and Engr. Anuj Biswas. ***Bangla version textbook*** of Information and Communication Technology for eleventh and twelfth classes approved by National Curriculum and Text Book Board of Government.

COURSE CO-ORDINATION

I have taught almost all courses of B.Sc. Engineering and M.Sc. Engineering of Information and Communication Engineering. Besides I have supervised many students of M.Sc. Thesis, Projects and additionally B.Sc. Projects. Mentionable courses are listed below which I have expertise from my PhD and experience of long time teaching:

Signal Processing, Information Coding and Transmission, Digital Communications, Mobile and Cellular Communications, High-Speed and Broadband Networks, Networks Management and Security, Internet and Intranet Engineering, Image Processing and Pattern Recognition, Multimedia Services on Internet, Simulation and Modeling, Client Server Technology and System Programming, Artificial Intelligence, Statistics for Communication Engineering, Digital Signal Processing, Mobile and Cellular Communications, Telecommunication System Engineering, Computer Networking, Microprocessors and Interfacing, Optical Fiber Communications, Multimedia and Web Technology, Data Warehouse Systems, Strategic Planning & Decision Support Technology, System Analysis & Software Engineering, Management Information Systems &Technologies, Data Structure & Algorithm, Computer Architecture & Parallel Processing, Electromagnetic Theory and Antenna, E-Commerce and E-Governance.

PERSONAL DETAILS

- **Name:** Tarek Hasan-Al-Mahmud.
- **Father's Name:** Prof. Md. Rezaul Karim (Principal).
- **Mother's Name:** Jahanara Karim.

- **Date of Birth:** 12 December 1982
- **Religion:** Islam.
- **Marital Status:** Married.
- **Nationality:** Bangladeshi (By Birth).
- **Web:** tarekhasan.net, www.iu.ac.bd, www.iceiu.edu.bd

REFERENCE

❖ **Dr. Md. Harun-Ur-Rashid Askari**
Professor
Department of English
Vice-Chancellor
Islamic University, Kushtia, Bangladesh
Cell: +88-01726113871
E-mail: rashidaskari65@yahoo.com

❖ **Dr. Zhongfu Ye**
Professor
Department of Electroni Engineering
and Information Science
University of Science and Technology of
China
Cell: +86-18919647951
E-mail: rashidaskari65@yahoo.com

❖ **Prof. Dr. Sanjoy Kumar Adhikary**
Head, Quality Assurance Unit
University Grant Commission, Bangladesh
Ex-Vice Chancellor
Noakhali Science and Technology
University, Bangladesh
Cell: +88-01914066287
E-mail: adhikaryku1958@gmail.com

❖ **A.H.M. Khairuzzaman Liton**
Mayor
Rajshahi City Corporation, Rajshahi

Signature:

(Tarek Hasan-Al-Mahmud)