# CURRICULUM VITAE OF SAADIA BINTE ALAM

Associate Professor & Head
Department of Computer Science and Engineering,
Independent University, Bangladesh (IUB).
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## SUMMARY

I am an academician with a strong research interest in medical image and signal processing, machine learning, artificial intelligence, and robotics. Along with extensive teaching experience, my research interest focuses on disease detection and prediction through medical image and signal data analysis based on machine learning, deep learning, etc. I am highly interested in developing interdisciplinary research collaborations, novel teaching methods, and modes of instruction that will fully engage the students in the learning process. As an academic collaborator, I have established international MOU and joint research collaboration projects, been involved with editorial activities, member of international professional organizations, international conferences, etc.

## CAREER HISTORY

**Associate Professor & Head**
Department of Computer Science and Engineering
Independent University, Bangladesh.
Duration: January 2024 to Date

**Associate Professor**
Department of Computer Science and Engineering
Independent University, Bangladesh.
Duration: January 2022 to Date

**Associate Professor and Chair**
Department of Electrical and Electronic Engineering
IUBAT, Dhaka, Bangladesh.
Duration: November 2020 to January 2022

**Postdoctoral Research Fellow**
Advanced Medical Engineering Center (AMEC)
Department of Electrical Engineering and Computer Science,
Graduate School of Engineering, University of Hyogo, Japan.
Duration: April 2020 to October 2020

**JSPS Postdoctoral Research Fellow**
Department of Electrical Engineering and Computer Science,
Graduate School of Engineering, University of Hyogo, Japan.
Duration: April 2018 to March 2020

**Visiting Researcher**
Department of Electrical Engineering and Computer Science,
Graduate School of Engineering, University of Hyogo, Japan.
Duration: October 2017 to March 2018

**MEXT Research Student (Ph.D.)**
Department of Electrical Engineering and Computer Science,
Graduate School of Engineering, University of Hyogo, Japan.
Duration: October 2014 to September 2017

**Assistant Professor**
Department of Electrical and Electronic Engineering
IUBAT-International University of Business, Agriculture and Technology, Dhaka, Bangladesh.
Duration: December 2013 to October 2020

**Lecturer**
Department of Electrical and Electronic Engineering
IUBAT-International University of Business, Agriculture and Technology, Dhaka, Bangladesh.
Duration: December 2008 to November 2013

**Invigilator**
British Council, Bangladesh
Duration: December 2007 to November 2008

**Assistant Manager**
Communication Technology Limited
Duration: July 2006 to August 2007

## EDUCATION

**Doctor of Engineering**
Department of Electrical Engineering and Computer Sciences,
Graduate School of Engineering, University of Hyogo, Japan.

**M.S**
Dept. of Applied Physics, Electronics and Communication Engineering, University of Dhaka.
Result: 1st Class
Academic Year: July2003-June2004 (Exam held in 2007)

**B.Sc. (Honors)**
Dept. of Applied Physics, Electronics and Communication Engineering, University of Dhaka.
Result: 1st Class
Academic Year: July1999-June2003 (Exam held in 2005)

## CONTRIBUTION TO IUB DURING 2024

1. Supervising 13 Thesis Student Groups with over 35+ students.
2. Funded Research Projects –
    a. IUB Sponsored Research Project [2024-SETS-12]: *Detection of Pneumonia from Chest X-ray (CXR) Using Deep Learning Method*
    **Principal Investigator (PI)**

b. IUB Sponsored Research Project [2022-SETS-05]: *Pelvic fracture and bone segmentation from radiographic images*
**Principal Investigator (PI)**
c. IUB Sponsored Research Project [2023-SETS-03]: *Deep learning-based Diabetic Foot Ulcer Severity Classification using Thermogram and Visual Images*
**Principal Investigator (PI)**
d. Ministry of Science and Technology (MOST) Research Grant:
*AI-Guided endoscope vision to make real-time navigation, examination and surgery easier for endoscopists and to improve patient comfort*
**Co-Principal Investigator (Co-PI)**

3. Established Research Projects Collaborations with –
   a. Advanced Medical Engineering Research Institute-(AMERI), University of Hyogo, Japan.
   b. Qatar University Machine Learning Group, Qatar University, Qatar.
   c. Quantum Computing Research Group, Algoma University, Ontario, Canada.
4. Research Internship program-
   a. Hyogo University Mobility in Asia and the Pacific (HUMAP): 2 Students from Dept. of CSE send for 1 year research program at University of Hyogo, Japan in 2023 and 2024.
5. Enlisted as Evaluator by **BAETE**.
6. Faculty Advisor at IUB BongoMarine Team for Singapore Autonomous Underwater Vehicle Competition (SAUVC):
   **a. SAUVC 2024:** Only team from Bangladesh to finish in the coveted top 15 out of 46 teams.
   **b. SAUVC 2025:** Got Selected to compete in the latest iteration of the competition on March 2025.

## FELLOWSHIP/SCHOLARSHIP/AWARD

PI, Sponsored Research Grant, IUB, 2022
JSPS Postdoctoral Fellowship, 2018
Best paper award, ICIEV 2015
MEXT Scholarship, 2014
DU Merit Scholarship, 2004

## RESEARCH INTEREST

Medical Image and Signal Processing, Artificial Intelligence, Machine Learning, Robotics

## AFFILIATION/COLLABORATION

Evaluator, BAETE
Faculty Advisor, IUB BongoMarine
Faculty Advisor, IEEE CS Student Branch, IUB
Director, The Intelligent Computing and Systems Research Group (ICSRG)
Head of Robotics, RIoT Center
Session Chair, STI 2024

Reviewer, ICIPRoB 2024
Member, IEEE
Associate Editor, Journal of Applied Science and Engineering (2020-2021)
Associate Editor, IEEE SMC (2022 - 2019)
Special Contributor, World Automation Congress (2022)
Track Chair (AI), IC4IR 2021
International program committee member, ICIPRoB (2022-2020)
Program committee member, ICIEV (2022-2019)
Session Chair, IC4IR 2021
Special Session Co-Chair, ICMLC 2019 and ICWAPR 2019
Special Session Co-Chair, IWACIII 2019
Technical Program committee member, ICSEA (2021-2019)
Reviewer, Journal of Healthcare Engineering, Hindawi
Reviewer, Journal of Advanced Computational Intelligence and Intelligent Informatics, Fuji Tec.
Reviewer, Journal of Medical Internet Research, JMIR
Reviewer, Current Medical Imaging, Bentham Science
Reviewer, IEEE International Conference on Systems, Man, and Cybernetics
Reviewer, International Conference on Informatics, Electronics & Vision
Collaborating Researcher, Joint Research Project, Hyogo College of Medicine, Japan
Researcher, Joint Research Project, Tokyo University of Agriculture and Technology, Japan
Research Supervisor (BD), Joint Research Project, AMEC, University of Hyogo, Japan.

## COURSES CONDUCTED

Research methodology, Introduction to AI, VLSI technology, Digital Signal Processing, Digital Image Processing, Transmission of Information, Communication Lab, Electronics Analysis and Design I, Electronics I Lab, Electronics Analysis and Design II, Electronics II Lab, Electronics Analysis and Design III, Electronics III Lab, Circuit Analysis I, Circuit Analysis I Lab, Microprocessor Systems and Interfacing, Microprocessor Interfacing Lab, General Physics, Physics Lab.

## LIST OF PUBLICATIONS

### PEER-REVIEWED JOURNAL

1. F. R. Sayem, M. U. Ahmed, **S. B. Alam**, S. Mahmud, M. M. Sheikh, A. Alqahtani, M. A. Atick Faisal, and M. E. H. Chowdhury, "A novel 1D generative adversarial network-based framework for atrial fibrillation detection using restored wrist photoplethysmography signals," Biomedical Signal Processing and Control, vol. 101, p. 107233, 2025.
2. M. N. I. Shuzan, M. H. Chowdhury, **S. B. Alam**, M. B. I. Reaz, M. S. Khan, M. Murugappan, and M. E. H. Chowdhury, “PPG2RespNet: a deep learning model for respirational signal synthesis and monitoring from photoplethysmography (PPG) signal”, Phys Eng Sci Med, 2024.
3. M.H. Rahman, M.F. Al Monir, R.H. Shihab, F.I. Ahammed, M.F. Uddin, M. Hasan, R. Islam, **S.B. Alam**: “Synergistic Design and Analysis of a Multi-Tasking Robot Enabling Artificial Intelligence for Hazard Response”, International Conference on Control, Automation and Systems, 2023.
4. T. D. Mou, **S. B. Alam**, M.H. Rahman, M. F. Uddin, M. Hasan: "Multi-Range Sequential Learning Based Dark Image Enhancement with Color Upgradation", MDPI Applied Sciences, 2023.
5. M.H. Rahman, **S. B. Alam**, T. D. Mou, M. F. Uddin, M. Hasan: "A dynamic approach to low-cost designs, development, and computational simulation of a 12dof quadruped robot", MDPI Robotics, 2023.

6. **S. B. Alam**, S. Kobashi, and A. Shimizu, "Spatiotemporal Statistical Shape Model for temporal shape change analysis of the adult brain", Current Medical Imaging 2019.
7. **S. B. Alam**, R. Rahman, S. Kobashi, and Y. Hata,"Muscle thickness measurement from reflection echo of the boundary surface", International Journal of Computer Vision and Signal Processing 2017.
8. **S. B. Alam**, R. Nakano, and S. Kobashi, "Brain Age Estimation Using Multiple Regression Analysis in Brain MR images", International Journal of Innovative Computing, Information and Control 2016.
9. D. Datta, U. K. Das, **S. B. Alam**, and Md. M. Islam, "Modeling monthly average daily diffuse radiation for Dhaka, Bangladesh", International Journal of Research in Engineering and Technology 2013.
10. Md. S. Islam, **S. B. Alam**, R. Ferdousy, and Md. E. H. Chowdhury, "Analysis of morphological brain change of Alzheimer Disease (AD) patients", Applied Physics Research (APR) journal 2010.

**PEER-REVIEWED BOOK CHAPTER**

11. **S. B. Alam** and S. Kobashi, "Comprehensive Modeling of Neonatal Brain Image Generation for Disorder development onset prediction based on Generative Adversarial Networks**",** Multidisciplinary Computational Anatomy, Springer, 2021.
12. S. Sakib, N. Yasmin, A. K. Tanzeem, F. Shorna, K. Md. Hasib and **S. B. Alam**, "Breast Cancer Detection and Classification: A Comparative Analysis Using Machine Learning Algorithms", Lecture Notes in Electrical Engineering Series, Springer, 2021.
13. **S. B. Alam** and S. Kobashi, "Spatiotemporal Statistical Shape Model Construction for the Observation of Temporal Change in Human Brain Shape**",** Non-invasive diagnostic methods Image Processing, IntechOpen, 2018.
14. **S. B. Alam**, S. Kobashi, and J. K. Udupa, "Fuzzy object growth model for neonatal brain MR understanding", Intelligent decision support systems for diagnosis of medical images, Springer, 2018.

**PEER-REVIEWED CONFERENCE PROCEEDINGS**

15. M. H. Rahman, M. Shahduzzaman, R. Mehnaj, M. J. H. Mekat, M. F. Uddin and **S. B. Alam**, "Smart Glasses Integrating Bone Conduction and Real-Time Image Processing for Impairment Assistance," 2024 24th International Conference on Control, Automation and Systems (ICCAS), Jeju, Korea, Republic of, 2024.
16. T. Hossain, R. Hossain, R. Islam and **S. B. Alam**, "Optimizing Warehouse Operations in Bangladesh: Leveraging IoT and Cloud Migration for Enhanced Security and Efficiency," 2024 11th International Conference on Future Internet of Things and Cloud (FiCloud), Vienna, Austria, 2024
17. M. H. Rahman, M. F. Hasan, J. M. S. -U. I. Smaron, S. Ahmed, M. F. Uddin and **S. B. Alam**, "Comparative Analysis of Two Pico Satellites: Performance, Sensor Integration, and Communication Technologies.," 2024 International Conference on Image Processing and Robotics (ICIPRoB), Colombo, Sri Lanka, 2024.
18. M. H. Rahman, S. Haque, M. F. A. Monir, M. F. Uddin and **S. B. Alam**, "Fabrication of a Revolutionary Pick-and-Place Robot with Omnidirectional Mobility," 2024 International Conference on Image Processing and Robotics (ICIPRoB), Colombo, Sri Lanka, 2024.
19. M. Haque, H. Nyeem, T. B. Ovi, A. Nahid, M. S. H. Molla, M. T. M. Tuhin, F. Shahab, A. S. Alam, and **S. B. Alam**, "Generalising Violence Detection with a New Near-Real-World Violence Dataset," 2024 3rd International Conference on Advancement in Electrical and Electronic Engineering (ICAEEE), 2024

20. J. Nohori, M. Shidujaman, A. Mahbub, H. Samani, C. Premachandra, M. F. Uddin, and **S. B. Alam**, "Design and Development of a Low-Cost Voice Interactive Children Educational Robot 'TINY' with Natural Language Processing," 2024 International Conference on Image Processing and Robotics (ICIPRoB), Colombo, Sri Lanka, 2024.
21. K. M. M. Limon, R. Rahman, M. P. Hasan, R. Islam and **S. B. Alam**, "SEECAT : Secure, Efficient, and Economical Cloud Architecture for Multi-Tier Application in Bangladesh," 2023 26th International Conference on Computer and Information Technology (ICCIT), Cox's Bazar, Bangladesh, 2023
22. S. A. Ul Alam, **S. Binte Alam**, S. Saha, M. Haque, R. Rahman and S. Kobashi, "Pelvic bone region segmentation (PBRS) from X-ray image using convolutional neural network (CNN)," 2023 26th International Conference on Computer and Information Technology (ICCIT), Cox's Bazar, Bangladesh, 2023.
23. Md. Anas Ali, Mahmudul Haque, Saadia Binte Alam, Rashedur Rahman, M Ashraful Amin, Syoji Kobashi: "Medical Personal Protective Equipment detection using YOLOv7", ICMLC 2023.
24. S. Wasi, **S. B. Alam**, R. Rahman, M. A. Amin, and S. Kobashi: "Kidney Tumor Recognition from Abdominal CT Images using Transfer Learning", ISMVL 2023.
25. T. T. Mayabee, K. T. Haque, **S. B. Alam**, R. Rahman, M. A. Amin, and S. Kobashi: "ECG Signal Classification using Transfer Learning and Convolutional Neural Networks", TCCE 2022.
26. M.H Rahman, M.Islam , Fayed Al Monir, **S.B. Alam**, Ruzbelt, M.M. Rahman, M.Shidujaman, Rubaiyat Islam: "Kinematics analysis of a quadruped robot: Simulation and Evaluation", ICIProb 2022.
27. S. Sakib, A. K. Tanzeem, I. K. Tasawar, F. Shorna, Md. A. B.Siddique and **S. B. Alam**, "Blood Cancer Recognition Based on Discriminant Gene Expressions: A Comparative Analysis of Optimized Machine Learning Algorithms", IEEE IEMCON 2021.
28. S. Sakib, N. Yasmin, A. K. Tanzeem, F. Shorna, K. Md. Hasib and **S. B. Alam**, "Breast Cancer Detection and Classification: A Comparative Analysis Using Machine Learning Algorithms", ICCES 2021.
29. N. Tasnim, F. P. Mahdi, **S. B. Alam**, N. Yagi, A. Nakashima, I. Komesu, Y. Tokunaga, and T. Sakumoto, "A quantification approach of uterine periatalsis propagated from the cervix and the fundus", ICMLC 2019 and ICWAPR 2019.
30. **S. B. Alam**, A. Shimizu, K. Ando, R. Ishikura, and S. Kobashi, "Disorder development onset prediction based on spatiotemporal statistical shape model", IEEE SMC 2018.
31. **S. B. Alam**, M. Nii, A. Shimizu, and S. Kobashi, "Machine learning with 3D spatio-temporal SSM for Alzheimer's disease patient classification", CARS 2017.
32. **S. B. Alam**, and Syoji Kobashi, "Identification of Alzheimer's disease patient from 3D-stSSM using machine learning algorithm", IFMIA 2017.
33. **S. B. Alam** and S. Kobashi, "Simple Brain Atrophy Quantification Method Using MR Images", ICIEV 2016.
34. **S. B. Alam**, R. Nakano, S. Kobashi, M. Morimoto, S. Aikawa, and A. Shimizu, "Spatiotemporal Statistical Shape Model Construction for Longitudinal Brain Deformation Analysis Using Weighted PCA", CARS 2016 Proceedings, Supplement of the International Journal of CARS, 2016.
35. S. Kobashi, **S. B. Alam**, and M. Nii, "Machine Learning Approaches for Brain Morphology Analysis in MR images", ISCIIA 2016.
36. **S. B. Alam**, R. Nakano, S. Kobashi and N. Kamiura, "Feature selection of manifold learning using principal component analysis in brain MR image", ICIEV 2015.

37. R. Nakano, S. Kobashi, **S. B. Alam**, M. Morimoto, Y. Wakata, K. Ando, R. Ishikura, S. Hirota, and S. Aikawa, "Neonatal Brain Age Estimation Using Manifold Learning Regression Analysis", IEEE SMC 2015.
38. S. Kobashi, R. Nakano, **S. B. Alam**, Y. Wakata, K, Ando, and R. Ishikura, "Quantitative evaluation of developmental retardation based on brain morphometry PCA analysis in neonatal MRI", RSNA 2015.
39. **S. B. Alam**, R. Nakano, N. Kamiura, and S. Kobashi, "Morphological changes of aging brain structure in MRI analysis", Int. Sympo. on Advanced Intelligent System, 2014.
40. Md. H. Rahman, **S. B. Alam**, and M. Shariar "Design of an Artificial Intelligent System to Generate 2D Map of Unknown Environment", ICIEV 2013.
41. Md. S. Islam, **S. B. Alam**, R. Ferdousy, and Md. E. H. Chowdhury, "Brain atrophy of an Alzheimer Disease affected patient", Regional Conference on Medical Physics 2011.
42. Md. S. Islam, Md. B. Hossain, **S. B. Alam**, and Md. E. H. Chowdhury, "Modeling of a Double-Layer Capacitor with individual branch response", WCECS 2010.
43. Md. Omar Faruk, Mohmud ul Aftab,Rajib Ahmed,OSA , Md. Belayat Hossain, Md. Shafiul Islam, **S. B. Alam**, "Effect of Lattice Constant and Hole Diameter on the mode profile in triangular and square lattice photonic crystal fiber at THz regime", WCECS 2010.
44. M.K. Alam, R. Islam, **S. B. Alam**, "Solar ponds technology for trapping solar energy in the coastal zone**",** National seminar on renewable energy, 2006.

**THESIS/ PROJECT**

1. Completed Ph.D. dissertation titled "Machine learning and wavelet analysis in medical imaging: An application towards radiomics".
2. Completed graduation thesis titled "Public key encryption-decryption for secured H-series multimedia terminals".
3. Completed undergraduate project titled "Propagation characteristics and path loss in UHF and SHF for mobile satellite communication".

**REFERENCE**

Syoji Kobashi, Ph.D.
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Advanced Medical Engineering Center (AMEC)
Department of Electrical Engineering and Computer Science
Graduate School of Engineering,
University of Hyogo, Japan.
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