Md Abu Hanif SHAIKH

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IICT-103, Academic Building-A
KUET, Khulna-9203, Bangladesh

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Village-Chakuli, PO-Betaga
Thana-Fakirhat, Bagerhat, Bangladesh

EDUCATION

2017-2022 **PhD**, Medical Informatics
Vrije Universiteit Brussel, Belgium
Thesis: Wiener-Hammerstein system identification applied to bioimpedance spectroscopy: computationally fast model configuration.

Abstract: Thesis proposes new techniques to minimize blood loss during surgical operation. It is done by the proper mathematical formulation of the bio-impedance on the electrosurgery data from Covidien Inc. The study hypothesized the underlying behavior as Wiener-Hammerstein (W-H) system. The computation time to identify the W-H system is minimized to a few minutes from several hours without any prior knowledge on Benchmark data. The good initial models are selected based on the Spearman correlation between internal signals of W-H system. But the performance of this technique is affected by the noise level. It can be recovered by a proposed variation of popular random forest technique.

Supervisor: **Prof. Dr. Kurt Barbé**

2012-2016 **Master of Science (Engg.)**, Computer Science and Engineering
Khulna University of Engineering & Technology, Bangladesh
Thesis: An Efficient Representation of Higher Dimensional Arrays and Its Evaluation.

Abstract: Thesis proposes the matricization of higher dimensional data for high performance computing. It is done by fitting odd numbered dimensions along row direction and even dimensions along column direction. It saves the storage and computation of highly sparse tensors.

Supervisor: Prof. Dr. K.M. Azharul Hasan
CGPA: **3.58** (out of 4.00 in Course-work)

Achievement: A popular python library 'pydata' is using above thesis to compute sparse multi-dimensional array as "This is stored in GCXS format, a generalization of the GCRS/GCCS formats from 'Efficient storage scheme for n-dimensional sparse array: GCRS/GCCS'" at https://sparse.pydata.org/en/0.15.4/generated/sparse.GCXS.html

2005-2009 **Bachelor of Science (Engg.)**, Computer Science and Engineering
Khulna University of Engineering & Technology, Bangladesh.

PUBLICATIONS (top 5 from https://scholar.google.com/citations?user=wY_8lmQAAAAJ**)**

[1] Md Abu Hanif Shaikh, and Kurt Barbé, "Dynamical System Modeling to Discriminate Tissue Types for Bipolar Electrosurgery," Elsivier *Biomedical Signal Processing and Control*, 2023. **Q1** (1 citation)

[2] Md Abu Hanif Shaikh, and Kurt Barbé, "Study of Random Forest to Identify Wiener-Hammerstein System," *IEEE Transactions on Instrumentation and Measurement*, vol. 70, 2021. **Q1** (22 citations)

[3] Md Abu Hanif Shaikh, and Kurt Barbé, "Wiener–Hammerstein System Identification: A Fast Approach Through Spearman Correlation," *IEEE Transactions on Instrumentation and Measurement*, vol. 68(5), pp. 1628-1636, 2019. **Q1** (45 citations)

[4] K.M A. Hasan, and Md Abu Hanif Shaikh, "Efficient representation of higher-dimensional arrays by dimension transformations," *Springers The Journal of Super Computing*, vol. 73(6), pp. 2801-2822, June 2017. **Q2** (12 citations)

[5] Md Abu Hanif Shaikh, and K. M. Azharul Hasan, "Efficient Storage Scheme for n-Dimensional Sparse Array: GCRS/GCCS," *Proc. Of IEEE HPCS*, July 2015, Amsterdam, Netherlands. (17 citations)

HONOURS

2017-2020 Doctoral Fellowship, Vrije Universiteit Brussel, Belgium

July 2015 Student Travel Grant, HPCS 2015, Amsterdam, The Netherlands

2006-2008 Technical Scholarship, Khulna Univ. of Eng. & Technology, Bangladesh

2005 BSC Scholarship, Nippon Foundation, Japan

ACADEMIC & PROFESSIONAL EXPERIENCE

2022-Present System Analyst, Khulna University of Eng. & Technology, Bangladesh

2017-2022 Researcher, Vrije Universiteit Brussel, Belgium

2016-2022 Programmer, Khulna University of Engineering & Technology, Bangladesh

2011-2016 Assistant Programmer, Khulna University of Engineering & Technology

2009-2010 Lecturer, Akij Institute of Technology, Khulna, Bangladesh

RESEARCH INTEREST

- Dynamical System Identification
- Advance Time Series
- Sparse Tensor Computation
- Generative AI

TECHNICAL EXPERTISE

Solved **686+ algorithmic problems on LeetCode** (https://leetcode.com/u/hanifvub), showcasing exceptional problem-solving and coding proficiency:

- **Machine Learning:** ***Agentic RAG***, LLM, Random Forest, SVM, Neural Networks, Feature Engineering, Model Optimization
- **Data Science Tools:** Pandas, NumPy, Scikit-learn, Matplotlib, PowerBI, Tableau
- **Programming:** Python, C/C++, SQL, PHP
- **Databases:** PostgreSQL, MySQL (Database Design, Optimization, High-Performance Querying)
- **Backend Development:** FastAPI, Flask, REST APIs, Microservices Architecture
- **Frontend Development:** React.js, Alpine.js, HTML/CSS, JavaScript
- **DevOps & Deployment:** Docker, CI/CD Pipelines, Linux (Ubuntu, Debian)

SCIENTIFIC CONTRIBUTION

Reviewer	IEEE Transactions on Instrumentation and Measurement (Since 2019) IEEE Transactions on Mobile Computing (Since 2022) IEEE TENCON, Singapore, 2016 IEEE ISCC, France, 2024
TPC Member	IEEE ISCC, France, 2024 IEEE ISCC, Bologna, 2025
Technical Co-Chair	International Conference on Electrical Information and Communication Technology (EICT 2023), Track- Artificial Intelligence International Conference on Electrical Information and Communication Technology (EICT 2025), Track- Artificial Intelligence

REFERENCE

[1] Dr. Kurt Barbé (Doctoral Manager and Promoter)
Professor (Statistics),
Vrije Universiteit Brussel, Belgium
+32 479257246 kbarbe@vub.be

[2] Dr. K.M. Azharul Hasan (Masters Supervisor)
Professor (Computer Science),
Khulna university of Engineering & Technology, Bangladesh
+88 01714087273 az@cse.kuet.ac.bd