MD ABU SUFIAN

PhD Researcher in Computer Science & AI

Bethnal Green, London, UK
2017901635@chd.edu.cn
+44 07782 144383

RESEARCH INTERESTS

I am a researcher specializing in Artificial Intelligence and Biomedical Informatics, focusing on developing scalable, interpretable, and clinically implementable AI solutions for healthcare. My work centres on cardiovascular risk prediction using advanced deep learning techniques, including transformer models, multi-modal data integration, and survival analysis, to translate complex models into real-world clinical decision-making tools. I have experience working with large-scale electronic health record (EHR) datasets. I am passionate about building clinical foundation models that improve the generalizability, reproducibility, and trustworthiness of predictive analytics in medicine. My research bridges data science innovation with clinical applicabilityaligned with the principles of implementation science and digital health transformation.

EDUCATION

PhD in Computer Science (via MPhil in Architecture, Computing and Engineering) *Nov 2024 to Present*
University of East London, London, UK
Research Excellent Tuition Fee Waiver Scholarship.
Title: Explainable AI Framework for Prediction of Age-Related Cardiovascular Disease Using Computer Vision and Generative AI Techniques.

MSc in Data Analysis for Business Intelligence with Industry *Sep 2020 to Jan 2023*
University of Leicester, Leicester, UK
Relevant Modules: Mathematical Modelling, Data Mining and Neural Networks, Analysis Design & Algorithm, Data Analytics for Esports, Practical Programming, Statistics, and Fundamental Data Science.

International MBA *Feb 2019 to July 2020*
Birmingham City University, Birmingham, UK
Relevant Modules: Global Marketing Management, Global Operations Management, Managerial Finance, Enterprise Innovation and Creativity, Strategic Leadership, and Organisational Transformation.

BSc in Textile Engineering *Jan 2008 to Dec 2012*
University of Chittagong, Chittagong, Bangladesh
Relevant Modules: Statistics (Course No. 209), Computer Science (Course No. 212), Mathematics (Course No. 101/102), Testing & Quality Control-III (Course No. 415/432), EEE (Course No. 210), and Wet Processing Technology (305/306/316/317/403/421).

PROFESSIONAL DEVELOPMENT

- **AI in Healthcare: Applications and Concepts**, Harvard University (Fellowship, On-campus).
- **AI and Digital Transformation in Health Care, Critical Thinking**, University of Cambridge (On-campus, Summer Program).
- **ML (Including Deep Learning, Representation Learning, and Generative AI) in Health and Bio**, Application of ML in Medicine and Biomedical Sciences, Oxford Mathematical Institute, University of Oxford (On-campus, Summer Program).

GUEST LECTURER

Institution: St. Joseph's College of Engineering and Technology, Thanjavur, India

Program: AICTE-ATAL Sponsored Faculty Development Program (FDP)
Topic: Recent Trends in Artificial Intelligence -Healthcare

RELEVANT WORK EXPERIENCE

Data Analyst, Midland Heart Ltd., UK *Feb 2023 Jun 2024*

Graduate Research Assistant, HSBC Financial Services Ltd., London, UK *Jun 2022 Oct 2022*
Project: Integrating Sustainability Metrics in Machine Learning-Based Risk Assessment Models for Improved Risk-Weighted Asset Calculation and Default Probability Prediction in Companies.

Data Analyst (Intern), ASAP Data Solution Ltd., Hatfield, UK *Aug 2021 Jun 2022*

COLLABORATIVE RESEARCH EXPERIENCE

Research Associate (Hybrid), IVR Low Carbon Research Institute, Chang'an University, Xi'an, China *Jan 2023 Present*

- Focus on Machine Learning, Deep Learning, and AI in health.

Researcher (Part-Time, Hybrid), University of Birmingham, UK *Dec 2023 Jun 2024*

- Utilized ElectroMap for quantitative cardiac electrophysiology data analysis, advancing cardiac research through optical mapping of heart tissue.

M.SC. UNIVERSITY PROJECTS

- **Merchandise Maxim: Leveraging Machine Learning to Elevate E-Sports Revenue** *Jan 2021 May 2021*
- **Data-Driven Analysis of UK Road Accident Casualties Using STAT19 Data in R** *Feb 2021 Apr 2021*
- **Advanced Epidemiological Modeling of COVID-19:** *Mar 2021 May 2021*
  A Multi-Framework Comparative Study Using Exponential, Logistic Growth, SIR, SCIR, and Socio-Psychological Dynamics.

JOURNAL ARTICLES

- **Sufian, M.A.**, Alsadder. L, Hamzi.W., ,Zaman.S., Sagar.A. S. M. S., Hamzi.B.(2024).Mitigating Algorithmic Bias in AI-Driven Cardiovascular Imaging for Fairer Diagnostics Diagnostics, MDPI, Manuscript ID: diagnostics-3302486, Accepted Q1.Link
- **Sufian, M.A.**, Niu, M., 2024 Hybrid Deep Learning for Computational Precision in Cardiac MRI Segmentation: Integrating Autoencoders, CNNs, and RNNs for Enhanced Structural Analysis, Computers in Biology and Medicine, Volume 186, March 2025, 109597, Elsevier, Q1. Link
- **Sufian, M.A.**, Hamzi, W.; Sharifi, T.; Zaman, S.; Alsadder, L.; Abdoun M.N.; Varadarajan, J.; Agha, S.; Hamzi, B. (2024). AI-Driven Thoracic X-ray Diagnostics: Transformative Transfer Learning for Clinical Validation in Pulmonary Radiography. J. Pers. Med. 2024, 14(8), 856, MDPI, Q1.Link
- **Sufian, M.A.**, et al. (2024). Enhancing Clinical Validation of Cardiovascular Disease Prediction: Integrating Simulation, AI, and Web Tech for Early Cardiovascular Disease Detection. Diagnostics 2024, 14, 1308, MDPI, Q1.Link
- **Sufian, M.A.**, et al. (2024). Innovative Machine Learning Strategies for Early Detection and Prevention of Pregnancy Loss: The Vitamin D Connection and Gestational Health. MDPI, Diagnostics 2024, 14, 920, Q1.Link
- **Sufian, M.A.**, Niu, M., and Miah, M.S. (2024). Trailblazing Multi-Phase Machine Learning Framework for Clinical Validation in Triple-Negative Breast Cancer Diagnosis: Integrating Advanced Imaging and Prognostic Analysis Techniques. BMC Cancer, Accepted, Springer, Q2.
- Varadarajan, J., & **Sufian, M.A.** (2023). Neuro App: AI-driven 4D brain image processing on standalone platforms. Journal of Computer Engineering & Information Technology. ISSN: 2324-9307.Link
- **Sufian, M.A.**, et al. (2024). Enhancing prediction and analysis of UK road traffic accident severity using AI: Integration of machine learning, econometric techniques, and time series forecasting in public health research. Heliyon, 10(7), e28547, Elsevier, Q1.Link

- **Sufian, M.A.** and Varadarajan, J. (2023). Revolutionizing Cardiac Care: Exploring the Synergy Between Entrepreneurial Ecosystems and 3D Deep Learning for Enhanced Heart Imaging in MedTech. Salient Journal of Cardiology (ISSN 2994-774X) , 2(1), pp.1-36.Link

PATENTS

Biosensor Device to Detect Lung Cancer *2024*
Inventors: Parthasarathy Krubaa, Anil Kumar, **Md Abu Sufian**, Aminul Islam, Haewon Byeon, and Raja Sudhakaran.
Patent: Government of India, Application No. 408327-001, Journal No. 16/2024.
Publication Date: 19 April 2024.
Available at: https://search.ipindia.gov.in/DesignApplicationStatus [Accessed 5 June 2024].

Machine-Learning-Embedded Heart Health Monitoring Device *2024*
Inventors: Kathargguppe Subbaramaiah Srinivas, **Md Abu Sufian**, Maher Ali Rusho, Sudipta Halder, Kinjal Parmar, and Calvin Ronchen Wei.
Patent: Registered Design in the UK, Patent Number 6392893.
Granted on: 01 October 2024.
Available at: https://www.registered-design.service.gov.uk/find/6392893 [Accessed 26 October 2024].

AI DRIVEN APPS & SOFTWARE

All are hyperlinked below		
Early Cardiovascular Diseases Prediction	3D MRI-Heart-Imaging	3D-Nature-Image Classification
Text Data Classification - Probuild360	4D Neuro-Imaging Standalone App	Medical Statistical Calculator
Cardiac Bioelectric Function Mapping Software	Post hoc explainer	Medical Imaging

CONFERENCE PROCEEDINGS

All first Author position.

- International Conference on Electrical, Computer and Energy Technologies (ICECET), Sydney, Australia: *CardioMap Pro 2.0: Advancing Cardiac Research with Next-Gen Analytical Software for Comprehensive Electrophysiological Mapping.* Paper ID: 430.
- Ecosystems 2023, Paris, France: *Driving Innovation in MedTech: The Role of Entrepreneurial Ecosystems in the Development of an AI-powered 3D Cardiac Imaging App.* Paper ID: 75.
- Future Technologies Conference, California, USA: *Machine Learning and Sustainability Metrics: Optimising Risk Assessment and Default Prediction.* Paper ID: 214.
- Landscape Decisions 2023, The Royal Society, London, UK: *AI Multi-Landscape Identifier App: A Data-Driven Approach for Understanding and Promoting Multifunctional Landscapes.* Paper ID: 130.
- ML in Healthcare 2023, Berlin, Germany. *NeuroApp: AI-Driven 4D Brain Image Processing on Standalone Platforms*, published in the Journal of Computer Engineering & Information Technology, ISSN: 2324-9307 Published: 21-09-2023.
- The British Accounting Review Global Conference 2023, Cape Town, South Africa; Harvard University Recent Advances in Fintech, Boston, USA: First author on *Interpreting, Querying, and Securing Complex Financial Documents: A Blockchain-Enabled, OCR & Language Model Approach.* Published in The BAR Journal (Impact Factor: 5.577).

BOOK CHAPTERS

- **Sufian, M.A. (2024)**. *Developing Trading Strategies in Decentralized Markets Prediction by Using AI, ML, and Blockchain Technology*, 1st ed. In: *Blockchain and AI - The Intersection of Trust and Intelligence*. CRC Press, Taylor & Francis Group, Chapter 3. ISBN 9780367753313.Link
- Islam, M.A., & **Sufian, M.A. (2023)**. *Employing AI and ML for Data Analytics on Key Indicators: Enhancing Smart City Urban Services and Dashboard-Driven Leadership and Decision-Making*. Emerald Publishing Limited, ISBN: 978-1-83753-023-6, eISBN: 978-1-83753-022-9. Published on 25 October 2023.Link

AWARDS AND ACHIEVEMENTS

- Harvard University Fellowship, Feb 2024, Boston, USA: AI for Healthcare: Concepts and Applications.
- AI+ Health 2023,2024 Conference Scholarship, Stanford Medicine, Stanford University, USA.
- The Royal Society Conference Scholarship, London, UK: Landscape Decisions Programme 2023 Conference - Multifunctional Landscapes.
- Digital Skills for Smart Manufacturing CPD Bootcamp, SteamHouse, Birmingham City University, UK: Sponsor: West Midland Combined Authority. Focus: Machine Learning and AI Application.

TECHNICAL SKILLS, PROFESSIONAL MEMBERSHIPS & PEER REVIEW

Technical Skills

- **Programming Languages**: Python, R, SQL, VBA, MATLAB.
- **Machine Learning and Deep Learning Frameworks**: TensorFlow, Keras, PyTorch, Scikit-Learn, and OpenCV.
- **Analytical Software/Tools**: SPSS, Power BI, Tableau, Excel (with Macros).
- **Data Processing and Visualization**: Pandas, NumPy, Seaborn, Matplotlib, and PyLab.
- **Cloud and High-Performance Computing (HPC)**: AWS (EC2, S3), Google Cloud Platform.
- **Domain-Specific Skills**: Signal Processing (Fourier and Wavelet transform), Computer Vision, Neural Networks, Algorithms, and 3D Modeling.

Professional Memberships

- Fellow, Royal Statistical Society (Ref. 98514633)
- IEEE Young Professionals (Ref. 98514633)
- BCS Member (Ref. 995126302)
- London Mathematical Society Member (LMS), Ref. (membership@lms.ac.uk)
- British Society for Cardiovascular Research (BSCR).

Peer Review Activities

- **npj Digital Medicine, Nature, 2024**:Ref.:e21c33bd-a3a3-434c-9034-b867afb6cc65, Q1.
- **IEEE Journal of Biomedical and Health Informatics, 2024**: Ref.: JBHI-02923-2024, Q1.

References Available Upon Request