

# Fatin Ahmed Mohammed Elhaj

## Curriculum Vitae

### Personal Details

**Name:** Fatin Ahmed Mohammed ELhaj

**Nationality:** Sudanese

**Marital Status:** single

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### Academic Qualifications

- PhD. in Computer Science (Specialized in Artificial Intelligent) Universiti Teknologi Malaysia (UTM), Malaysia(2015-2018).
- MSc. in Computer Science University of Khartoum, Sudan(2008-2009).
- BSc. in Computer Science University of Khartoum, Sudan (2000-2005).

### Employment History

Programmer — Agricultural Bank of Sudan Headquarter Programmer, Analyzed and designed relational databases using (Oracle 10g, PL/SQL). Built, tested and deployed scalable software products (Sep 2005 - Sep 2006).

### Professional Membership & Activities

- Research Co-supervision of M.Sc. thesis project at University Technology Malaysia(UTM), Faculty of Bio-Science and Medical Engineering. Thesis project on Feature Enhancement Analysis of Fundoscopic Images for Diabetic Retinopathy Classification.
- Research Supervision of M.Sc. student at University of Khartoum, Faculty of Mathematical Science.

### Teaching Experience

Assistant professor

- Safat College of Science and Technology, Department of Computer Science-Sudan from April 2018-April 2021.
- Department of Computer Science, Faculty of Mathematical Science and Informatics, University of Khartoum, Sudan Sep 2018-Sep2020.

## Lecturer

- Faculty of Computer Science Information Technology, University of Medical Sciences and Technology, Sudan (Sep 2010 -Sep 2012).
- Faculty of Computer Science, Information System department, King Khalid University , Saudi Arabia (Sep 2013 - Sep 2014).

## Teaching assistant

- Computer Science Department, Faculty of Mathematical Sciences and Informatics, University of Khartoum (Sep 2006 - Sep 2008).

## Conferences & Workshops

- **Elhaj, F.A.**, Deriche, M. and Khalid, N., 2023, February. Heartbeat Classification of Arrhythmia using Hybrid Features Extraction Techniques. In 2023 20th International Multi-Conference on Systems, Signals & Devices (SSD) (pp. 925-933). IEEE.
- **Elhaj, F.A.**, Salim, N., Alhaj, T., Harris, A., Swee, T. (2017). "Hybrid classification of Bayesian and extreme learning machine for heartbeat classification of arrhythmia detection. In Student Project Conference (ICT-ISPC), 2017 6th ICT International, pp. 1-4, IEEE.
- Abushama, H., Alassam, H., **Fatin A. Elhaj.** (2021). The effect of Test-Driven Development and Behavior-Driven Development on Project Success Factors: A Systematic Literature Review Based Study. 2020 International Conference on Computer, Control, Electrical, and Electronics Engineering (ICCCEEE), 2021, pp. 1-9, ICCEEE.
- Attended a training workshop on research methodology and publication strategy - Malaysia.
- Attended a training workshop on Online Database and Endnote Workshop- Malaysia.
- 11th postgraduate annual research seminar (PARS) 2015.
- Attended and complete the training course for introduction to twitter API and R programming Malaysia.
- EGI Geodesic EEG System 400 system.
- Big data platform professional talk.
- Successfully presented a paper in The Fourth International Conference on Computer Science Computational Mathematics (ICCSCM 2015), Langkawi, Malaysia.

## Research Interests

- Image recognition and classification.
- Digital Signal Processing (EEG, ECG, etc.).
- Cybersecurity Governance
- Emerging Technology (IoT, Blockchain)
- Artificial Intelligence, data Science, machine learning and deep learning techniques.

## Research Publications (Books, Journals & Conferences papers)

- **Elhaj, F. A.**, Taqwa A. Alhaj, Shamiel H. Ibrahim, Omayma Husain, Tariq M. Khan, Tasneem Darwish., 2025. URLMoE: Leveraging Multi-Head Attention and Expert Specialization for Robust Malicious URL Classification. Telecommunication Systems, (major revision).
- **Elhaj, F. A.**, Henrik Stahl, Taqwa A. Alhaj, Shamiel H. Ibrahim, Fatima Boumahdi, Hamza Hentabli., 2025. Integrating Machine Learning for Marine Ecosystem Monitoring: Advances,

Applications, and Challenges in Cetacean Photo-Identification. Environmental Monitoring and Assessment, (Under Review).

- Tusneem Ahmed Mohamed Elhassan , Mohd Shafry Mohd Rahim, **Elhaj, F. A.**, Alfadil Haroon, Mahmoud Aljurf. ,2025.Machine Learning-Based Automated Classification of Immature White Blood Cells in Acute Myeloid Leukemia: A Meta-Analysis of Diagnostic Accuracy, Diagnostic-MDPI, (Under Review).
- Naim, A., **Elhaj, F. A.**, and Magd, H. (2026). Applications Information and Communication Technology in Structuring Resilient Infrastructure and Promoting Sustainable Industrialization in Arab Region. *World Journal of Entrepreneurship, Management and Sustainable Development*, Vol. 22, Nos 1-2, pp, (Accepted).
- Darwish, T., Alhaj, T. A., & **Elhaj, F. A.**, 2025. Controller placement in software defined emerging networks: a review and future directions. *Telecommunication Systems*, 88(1), 18.
- Babikir, M. M. A. E., Ibrahim, F. I. A., Elhassan, H. H. O., **Elhaj, F. A.**, Elabdin, S. O. H. Z., Mohammed, S. A. S., ... & Osman, M. (2025). Predicting Intracranial Hypertension in Traumatic Brain Injury Using AI: A Systematic Review of Algorithms and Their Clinical Integration Potential. *Cureus*, 17(4).
- **Elhaj, F.A.**, Deriche, M. and Khalid, N., 2023, February. Heartbeat Classification of Arrhythmia using Hybrid Features Extraction Techniques. In 2023 20th International Multi-Conference on Systems, Signals & Devices (SSD) (pp. 925-933). IEEE.
- Yusuf, M.N., Bakar, K.B.A., Isyaku, B., Osman, A.H., Nasser, M. and **Elhaj, F.A.**, 2023. Adaptive path selection algorithm with flow classification for software-defined networks. *Mathematics*, 11(6), p.1404.
- Alhaj, T. A., Siraj, M. M., Zainal, A., Idris, I., Nazir, A., **Elhaj, F.**, & Darwish, T. (2023). An effective attack scenario construction model based on identification of attack steps and stages. *International Journal of Information Security*, 22(5), 1481-1496.
- Alhaj, T.A., Idris, I., **Elhaj, F.A.**, Elhassan, T.A., Remli, M.A., Siraj, M.M. and Mohd Rahim, M.S., 2022. Preliminary Stages for COVID-19 Detection Using Image Processing. *Diagnostics*, 12(12), p.3171.
- Alhaj, T.A., Abdulla, S.M., Idriss, M.A.E., Ali, A.A.A., **Elhaj, F.A.**, Remli, M.A. and Gabralla, L.A., 2022. A Survey: To Govern, Protect, and Detect Security Principles on Internet of Medical Things (IoMT). *IEEE Access*, 10, pp.124777-124791.
- **Elhaj, F.A.**, Salim, N., Ahmed, T., Harris, A.R. and Swee, T.T., 2017, May. Hybrid classification of Bayesian and extreme learning machine for heartbeat classification of arrhythmia detection. In 2017 6th ICT International Student Project Conference (ICT-ISPC) (pp. 1-4). IEEE.
- **Elhaj, F.A.**, Salim, N., Harris, A.R., Swee, T.T. and Ahmed, T., 2016. Arrhythmia recognition and classification using combined linear and nonlinear features of ECG signals. *Computer methods and programs in biomedicine*, 127, pp.52-63.
- **Elhaj, F.A.**, Harris, A.R., Swee, T.T. and Salim, N., 2015. Combination of Nonlinear Feature Extraction Techniques for ECG Arrhythmia Detection System. *Research Journal of Applied Sciences, Engineering and Technology*, 11(9), pp.1024-1029.
- Alhaj, T, Md Siraj,M., Zainal,A., Elshoush,H, and **Elhaj,F.** (2016).Feature Selection using Information Gain for Improved Structural-based Alert Correlation. *PLOS ONE/ P ONE – D – 21044R1F T C*.

### Peer Review Activities

- Performed 1 review paper for journal of Supercomputing "AGBi-Mamba: A Traffic Flow Prediction Model Based on Adaptive Graph Convolution and Bidirectional Mamba Networks",2025.

- Performed 1 review paper for journal, Computers & Electrical Engineering" A Hybrid Approach for Machine Learning based Beat Classification of ECG using Different Differentiators and DTCWT Transform",2024.
- Performed 1 review for IRBM journal "Comparative Analysis of Various Wavelet based ECG Data Compression Techniques" including Elsevier. The certificate is awarded since August 2019.
- Performed 1 review for journals "Automated Heartbeat Classification Exploiting Convolutional Neural Network with Channel-wise Attention" including IEEE Access; placing in the 35th percentile for verified review contributions on Publons up until August 2019 .

### **Research, Teaching Grants**

- Research grant from University Research Board (URB) in "Multispecies photo-identification of Cetaceans in the Gulf of Oman and Arabian Gulf using AI".
- Research topic :Developed an enhanced Electrocardiography signal analysis technique for heartbeat classification of Arrhythmia detection.
- Research topic :Automatic building detection based on supervised classification Images from Google Earth.
- Research Topic: Ship Detection in Remote Sensing Images from Google Earth.
- Research topic in Object detection using CNN, Customer churn detection in Telecommunication analysing using machine learning, Activity recognition based CSI using deep learning and Covid-19 detection based on CT and X-ray images).

### **Awards and Recognitions**

- Recognition from UTM Malaysia at UTM citra Karisma-top cited journal article and indexed journal publication for 2020.

### **University & Community Services**

- Assisted students in selecting suitable courses aligned with their academic goals, career aspirations, and degree requirements. Provided personalized advice based on each student's academic performance, interests, and long-term objectives.
- Applying for Research Grants through the University Research Board (URB).
- Organized and facilitated workshops on academic success strategies, time management, and research skills.
- Training employee staff at university of Khorfakkan in developing software skills and best practices .
- Training Academic staff at university of Khorfakkan in developing software skills and best practices.
- Participate in talk related to Sharqia TV discussing ethical computer use.
- Helping and Guiding a PhD research topic: A Speech-Based Emotion Recognition Framework ( University of Sudan, 2018,) .
- Helping and Guiding a PhD research topic: Mitigation and Detection Security issue in Internet of Things Network (University Teknologi Malaysia, 2017).
- Helping and Guiding a PhD research topic: Cells in Acute Myeloid Leukemia Microscopic Images. (University Teknologi Malaysia, 2017) .