Fathi Mahdi Elsiddig Haroun

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Martial State: single

Birthday: May 12 1996

Nationality : Sudanese

PERMANENT ADDRESS:

A-17-5 Kondominium Unipark Jalan Us 1 Off Jalan Ikram-Uniten Taman Kajang, 43000 Selangor, Malaysia.

EDUCATION:

2019-2021 Master's in electrical engineering (FULL TIME) from Universiti Tenaga National (UNITEN) Malaysia, first class with honors. Graduation thesis: "Power Line Corridor Vegetation Encroachment Detection from Satellite Images Using RetinaNet and Support Vector Machine"**.**

2013-2018 Bachelor of engineering science with honor in Electronics Engineering (Industrial Electronics) (FULL TIME) from Sudan University of Science and Technology. Graduation thesis: "Design of an Automated Apple Fruit Grading System Based on Simple Linear Iterative Clustering and Support Vector Machine Algorithms"**.**

EXPERIENCE:

- Firmware engineer at Advanced Microelectronics Solutions (AMS) Sdn Bhd. As a Firmware Engineer at Advanced Microelectronics Solutions (AMS) Sdn Bhd, my primary responsibilities entail the development of IoT nodes and Industrial IoT controllers.

- Technical Leader at Teknology ASV Sdn. Bhd. The role demands my focus on developing mmWave-based radar systems for vehicle detection, crowd monitoring, and people counting. . Additionally, I spearheaded the creation of a LoRaWan-based vehicle tracking system, encompassing circuit design, PCB design, and firmware programming utilizing STM32 MCU technology from February 2022 to March 2023

- Research Officer at university Tenaga National developing an AI-based satellite image monitoring system for the power transmission lines owned by the TNB company. Also, I developed an ultra-low power WSN node that has the ability to harvest the ambient light energy as a self-power technique for IoT applications from Feb-2020 to Feb-2022.

- Working as "Assistant Teacher (TA'S)" in Sudan University of Science and Technology specified in (Data Structure and Microcontrollers) Nov-2018 to Aug-2019.

- Training in "Digitech service centre" – (maintenance & installation department) (LG Devices) training 20 March 2016 to 19 April 2016.

- Training in "Khartoum Refinery CO.LTD (KRC)" (Field Instrumentations) 30 Oct 2016 to 10 NOV 2016.

Key Skills:

- Programing languages (Assembly, C, C++, python, MATLAB).
- Microcontrollers and embedded development boards **(**AVR, PIC, STM32, ARM based microcontrollers**)**.
- FPGA (Xilinx).
- Linux, embedded Linux and real time OS.
- Embedded software.
- Machine Learning and Deep Learning algorithms. (MATLAB/c++/python).
- ML/DL frameworks (Keras, Tensorflow, Sklearn).
- Image processing (MATLAB/c++/python).
- PCB design (Kicad).
- Communication protocols (I2C, I2S, ISP, USART, SPI).
- Debugging (JTAG, SWD)
- AWS Cloud services.
- IoT network communication protocols (LoRa WAN, Zigbee, Sigfox)

Engineering Projects:

- Environment monitoring IoT nodes.
- Industrial IoT controller.
- Automatic traffic monitoring based on mmWave radar.
- BLE based Asset tracking.
- Automatic crowd monitoring using mmWave radar.
- Costum LoRa tracking network.
- Automatic TT detection from high resolution satellite images (CONTRACT IRMC UNITEN).
- Detection of Vegetation Encroachment in Power Transmission Line Corridor from Satellite Imagery (CONTRACT, IRMC UNITEN).
- Low energy solar based WSN with LoRA (CONTRACT, IRMC UNITEN).
- Automatic control of robotic hand through real time deep learning inference (CONTRACT, IRMC UNITEN).
- Ac synchronous motors speed control using Artificial Neuron Network (ANN) (CONTRACT, SUMAKERS LAB, SUDAN).
- Hart beat classification (normal-abnormal) using SVM Machine Learning ML classifier (CONTRACT, SUMAKERS LAB, SUDAN).
- Vegetation encroachment detection form satellite images (CONTRACT TES LAB UNITEN, MALAYSIA**)**
- Deep learning based social distance solution (CONTRACT TNB & UNITEN, MALAYSIA).
- Smart fertilizer control system for agriculture tractors (Private work).
- Car licence plate detection using raspberry pi (Private work)
- Two axis solar panel tracker control system (University exhibition).
- Color tracker robot (University exhibition).
- Smart IOT-based farm (Arab Innovation qualifiers).

RESEARCH INTEREST:

- Applications of Deep learning on satellite images.
- Machine Learning and Deep learning optimization.
- Quantum computing for machine learning optimization.
- Low energy IoT devices.
- Energy harvesters.

PUBLICATION:

Journal:

[1] F. M. E. Haroun, S. N. M. Deros, and N. M. Din, “A review of vegetation encroachment detection in power transmission lines using optical sensing satellite imagery,” *Int. J. Adv. Trends Comput. Sci. Eng.*, vol. 9, no. 1.4 Special Issue, pp. 618–624, 2020, doi: 10.30534/ijatcse/2020/8691.42020.

[2] F. Mahdi Elsiddig Haroun, S. N. Mohamed Deros, M. Z. Bin Baharuddin,

and N. Md Din, "Detection of Vegetation Encroachment in Power Transmission Line Corridor from Satellite Imagery Using Support Vector Machine : A Features Analysis Approach," *Energies*, vol. 14, no. 12, 2021, doi: https://doi.org/10.3390/en14123393.

[3] F. M. E. Haroun, S. N. M. Deros, and N. M. Din, "*Detection and Monitoring of Power Line Corridor From Satellite Imagery Using RetinaNet and K-Mean Clustering*," IEEE Access, vol. 9, no. Vi, pp. 116720–116730, 2021, doi: 10.1109/access.2021.310655.

[4] F. M. E. Haroun, S. N. M. Deros, Ammar Ahmed Alkahtani, and N. M. Din, "*Towards Self-Powered WSN: The Design of Ultra-Low-Power Wireless Sensor Transmission Unit Based on Indoor Solar Energy Harvester*,"*Electronics*202*11*(13),2077;https://doi.org/10.3390/electronics11132077.

Blueprint:

Zainab E.M.M, Ahmed Hassan Mohamed A.M, FME Haroun, "*Design of an Automated Apple Grading System Using Image Processing and Machine Learning Algorithm*".

Conference:

[4] F. M. E. Haroun, Ahmed Dziaul Islam Abdul Kadir, *et al*. "A Portable Distributed Cloud-Based Workspace Monitoring Platform Under The Covid-19 Pandemic Condition", Pre-print, OCT 2021 doi: https://doi.org/10.13140/RG.2.2.26084.09601

MEMBERSHIP:

- Sudanese Engineering Council 2018-present.
- IEEE student member 2017-2018.

REFEREES:

1. Prof Dato I`r Dr. Norashidah Binti Mhd Din University Tenaga National UNITEN, Norashidah@uniten.edu.my (Malaysia).
2. Dr Hisham Ahmed Sudan University of science and technology SUST, hish_ahmed@gamil.com (Sudan).
3. Dr. Siti Noratiqah Binti Mohamed Deros University Tenaga Nasional UNITEN, Siti.Noratiqah@uniten.edu.my (Malaysia).
4. Dr. Maida Abd-Algadir Sudan University of science and technology SUST mayadanott13@gmail.com (Sudan).

SOCIAL CONTACTS:

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Github: https://github.com/FathiMahdi

Portfolio: https://fathimahdi.github.io/fathi_mahdi.github.io/

Personal website: https://www.fathimahdielsiddig.com/

Research Gate: https://www.researchgate.net/profile/Fathi-Mahdi-Elsiddig-Haroun