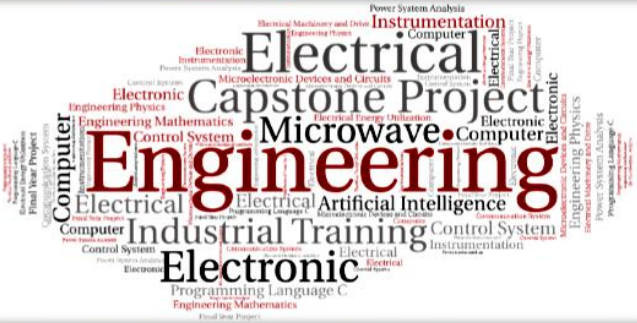
Research and Innovation Achievements
Department of Electrical and Electronics Engineering

XIAMEN UNIVERSITY MALAYSIA
厦門大學馬來西亞分校



WELCOME

The Department of Electrical and Electronics Engineering of Xiamen University Malaysia was founded in 2017. Championed by experts across the major sub-disciplines of electrical and electronics engineering, the department is committed to be an internationally renowned center of excellence in education, research and innovation, continually striving to discover future directions for entrepreneurship and electrical engineering. This article contains the information pertaining to the research and academic achievements during the period of 2017 – 2021.

Research Grants

RM 879,738
External Grants as PI/ Co-Researcher

RM 360,000
XMUMRF Grants

Academic Publications

13 Q1
4 Q2
4 Q3
4 Q4
13 Scopus
10 Proceedings
3 Book/Book Chapters
3 Patents of Inventions

Research Awards & Student Achievements

IEEE XMUM Student Branch Robotic Club
2 Publications
5 International Competition Awards
4 National Competition Awards

EEE @ XMUM

We are a team of extraordinary people dedicated to engineering education, aiming to attract the finest faculties and students in the world. Currently, we have more than 250 students (approximately 35% from Malaysia, 60% from China and 5% from other regions) and 16 faculty members.

The curriculum covers Engineering Mathematics, Electrical Engineering, Electronic Engineering, Microelectronic Devices and Circuits, Instrumentation, Control System, Electrical Machinery and Drive, Power System Analysis, Electrical Energy Utilization, Communication System, Capstone Project, Final Year Project and Industrial Training. These courses are designed to prepare our graduates for future technological and societal changes and solve complex engineering problems in their workplace.

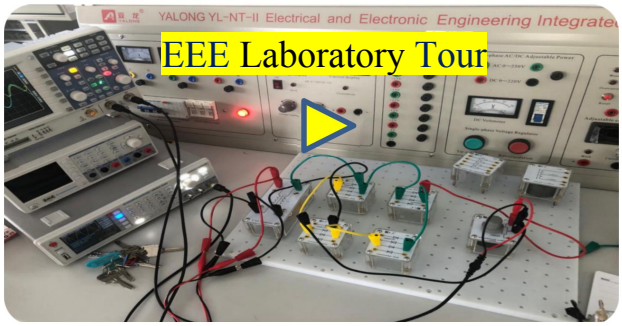
The EEE programme offered by XMUM is approved by the Board of Engineers Malaysia. The key highlight of the programme is the graduates would be fit to enter employment and undertake training and experiential learning leading to professional competence such as Professional Engineer (Ir) or Chartered Engineer (CEng). Another key highlight is the industrial training which provides students with knowledge base and skills to help them translate isolated and abstract concepts into practical applications of that knowledge.

PROFESSIONAL ENGINEER WITH PRACTISING CERTIFICATE
ELECTRICAL
MALAYSIA

Chartered CEng Engineer

The EEE programme provides a myriad of activities and services that related to the general welfare of students. The Student Affairs Committee provides the support and resources to assist students to improve their academic performance through academic advisory, general and engineering students' clubs, IEEE XMUM student branch, career planning advice and so on.

EEE@XMUM is closely linked with the School of Electronics Science and Engineering in Xiamen University, which is founded in 1940 by the 1st President of National Xiamen University, Prof. Pen-Tung Sah. It is one of the pioneer universities in China that offer electronics related programmes with specialisation in semiconductor.



Our Programmes

Bachelor of Electrical and Electronics Engineering (Honours)

Master of Science in Electrical and Electronic Engineering

Bachelor of Electrical and Electronics Engineering Honours
(KPT/JPS[N/523/6/0291]02/22[MQA/PA5671]

This programme is approved by the Engineering Accreditation Council (EAC) Malaysia. A comprehensive curriculum covers a wide range of electrical discipline and integrate practical training with theoretical learning. The graduates are equipped with expertise and skills to perform professional roles in the field of electrical and electronic engineering, registered as graduate

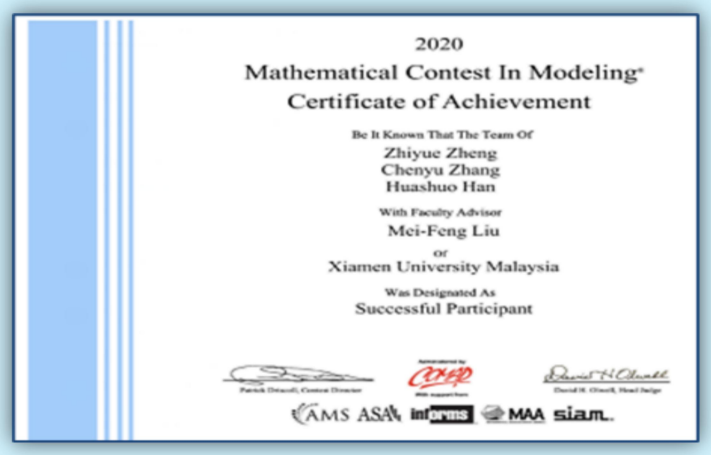
Master of Science in Electrical and Electronic Engineering (Under Approval)

The program has a total load of forty-two (42) credits consisting of courses and research projects during 2 years full-time/3 years part-time. The award of single major master's degree is offered by course work. Graduates will demonstrate a mastery of knowledge, critical thinking, creative and innovative skills in electrical and electronic engineering or related field.

Student Activities and Achievements

Student activities are generally designed to allow students to become more involved on and off campus. Involvement in activities helps students mature socially by providing a setting for student interaction, relationship formation, and discussion. At the Department of Electrical and Electronics Engineering, our students participated in career talk, national public talk and international competitions, and they have won many awards in these competitions. These awards serve as acknowledgements of the achievement of our students and faculty members. Some examples of prizes by our students include but not limited to:

IEEE XMUM STUDENT BRANCH



THE KYOTO INTERNATIONAL ENTERPRENEURSHIP CONTEST, 2020

INTERNATIONAL MULTIDISCIPLINARY INNOVATION COMPETITION (IMIC) 2021

SILVER MEDAL

2ND X-AWARDS COMPETITION, 2019

(ONG CHENG SEANG, BEST LEADERSHIP AWARD)

FUTURE AIRCRAFT INNOVATION COMPETITION

1ST CHINA –MALAYSIA YOUTH INNOVATION & ENTREPRENEURSHIP COMPETITION 2019

(LU YONGDI, THIRD PRIZE)

KYOTO INTERNATIONAL ENTREPRENEURSHIP CONTEST FOR UNIVERSITY STUDENTS, 2019

(LI SHANSHAN, THIRD PRIZE)

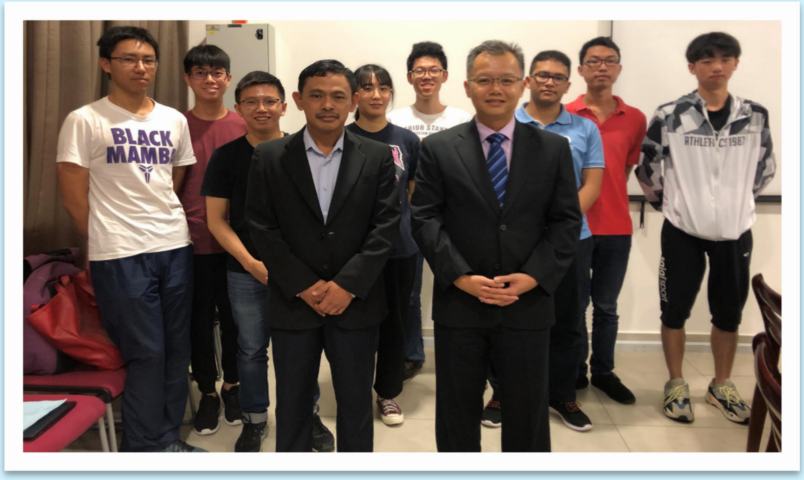
HUAWEI COMPANY VISIT, 2019

BUILDING TALK , 2019

INDUSTRY ADVISOR TALK , 2019

“AI+” TALK

CAREER TALK, 2019



EXTERNAL ADVISOR VISIT

Research and Innovation Achievements (2018-2021)

1. Research Grants

The Department of Electrical and Electronic Engineering continuously strengthens its research quality in the various area including Integrated Circuit (IC) Design, Artificial Intelligence (AI), Radio Frequency (RF) and Microwaves, Biomedical Engineering, Renewable Energy and others. The department external research funding is available from a variety of sources, including government agencies, other private and public institutions, non-profit organizations, and corporations. The total amount of external grants secured was totaling **RM 879,738**. Besides, seven (7) EEE academics also have successfully secured **RM 360,000** of internal grant funding (XMUMRF) since 2018.

No.	Project Title	Funder	Amount	Name/Role	Duration
1	Transistor structural study for IoT and Cloud Based Transceivers for Remote Infectious Disease Monitoring System	FRGS, MOE	RM73,200	Dr. Mohammad Arif Sobhan Bhuiyan Principle Investigator	2020 – 2022
2	Research and Design on Smart Embedded Technology	Xiamen Industry-University Collaboration Research Project	RM260,000	Prof Li Xiaochao Principle Investigator	2019-2021
3	Development of Autonomous Intelligent Condition Based Maintenance System for Renewable Energy Enabling Technology	UNITEN	RM128,000	Dr. Tan Jian Ding Co-Researcher	2021 – 2023
4	Neurophysiological Profiling Model for Mental Fatigue	KICT Research Initiative Grant Scheme, IIUM	RM16,000	Dr. Khairun Nisa' Binti Mihat (Minhad) Co-Researcher	2021 – 2021
5	Physical Theories of Urban Transport Networks via Transportation Data	FRGS, MOE	RM74,200	Dr. Mohammad Arif Sobhan Bhuiyan Co-Researcher	2019 – 2022
6	Characterizing Changes in Community Structure of Complex Networks Using Dynamic Stochastic Block Models to Identify Aberrant Brain Connectivity	FRGS, MOE	RM60,200	Dr. Siti Balqis Binti Samdin Co-Researcher	2019 – 2021
7	Virtual Reality Based Ergonomics Training for Aerospace Manufacturing	IIRG, UM	RM243,138	Assoc. Prof. Ir.Ts. Dr. Wong Shen Yuong Co-Researcher	2019 – 2021
8	A Hybrid FAM-OSELM NN Model for Solving Pattern Classification in Non-stationary Environment	University BOLD Fund, UNITEN	RM25,000	Assoc. Prof. Ir.Ts. Dr. Wong Shen Yuong Co-Researcher	2019 – 2020

2. Academic Publications

The summary of the journal articles, book, book chapters and conference proceedings published by the EEE academic staff are listed in the following tables.

Journals

Year 2021				
No.	**Title**	**Author**	**Publisher**	**Category**
1	Performance analysis of conventional machine learning algorithms for diabetic sensorimotor polyneuropathy severity classification	Dr. Mohammad Arif Sobhan Bhuiyan, Corresponding Author	Diagnostics (Basel)	WoS (SCI Q1)
2	Force-invariant improved feature extraction method for upper-limb prostheses of transradial amputees	Dr. Mohammad Arif Sobhan Bhuiyan, Corresponding Author	Diagnostics (Basel)	WoS (SCI Q1)
3	An 8.72 μW low-noise and wide bandwidth fee design for high-throughput pixel-strip (PS) sensors	Dr. Mohammad Arif Sobhan Bhuiyan, Corresponding Author	Sensors	WoS (SCI Q1)
4	Detecting dynamic community structure in functional brain networks across individuals: A multilayer approach	Dr. Siti Balqis Samdin, Co-Author	IEEE Transactions on Medical Imaging	WoS (JCR Q1)
5	Performance analysis of a hybrid optical CDMA/DWDM system against inter-symbol interference and four wave mixing	Dr. Tawfig Ahmad A Eltaif, Co-Author	Digital Communications and Networks	WoS (JCR Q1)
6	A study on arrhythmia via ECG signal classification using the convolutional neural network	Ir. Ts. Dr. Wong Shen Yuong, Corresponding Author	Frontiers in Computational Neuroscience	WoS (SCI Q2)
7	Review of indoor positioning: Radio wave technology	Ir. Dr. Liew Chia Pao, Co-Author	Applied Sciences-BASEL	WoS (SCIE Q2)
8	Factors affecting the acceptance of open learning as e-learning platform by technical course students	Ir. Ts. Dr. Lohgheswary A/P Nagarethinam, Co-Author	Journal of Engineering Science and Technology	WoS ESCI Scopus
9	Passively Q-switched pulses generation from erbium-doped fiber laser using lutetium oxide as saturable absorber	Dr. Tawfig Ahmad A Eltaif, Co-Author	Journal of Microwaves, Optoelectronics and Electromagnetic Applications	Scopus
Year 2020				
No.	**Title**	**Author**	**Publisher**	**Category**
1	Face Detection Based on Receptive Field Enhanced Multi-Task Cascaded Convolutional Neural Networks	Prof. Dr. Li Xiaochao, First and Corresponding Author	IEEE Access	WoS (SCI Q1)
2	A new probabilistic output constrained optimization extreme learning machine	Ir. Ts. Dr. Wong Shen Yuong, First Author	IEEE Access	WoS (SCI Q1)

3	Enhancement of neural network based multi agent system for classification and regression in energy system	Ir. Ts. Dr. Wong Shen Yuong, Corresponding Author	IEEE Access	WoS (SCI Q1)
4	3D broadband waveguide cloak and light squeezing in terahertz regime	Prof. Dr. Li Xiaochao, Co-Author	Optic Letters	WoS (SCI Q1)
5	Compensation of chromatic dispersion and nonlinear phase noise using iterative soft decision feedback equalizer for coherent optical FBMC/OQAM systems	Dr. Tawfig Ahmad A Eltaif, Co-Author	Journal of Lightwave Technology	WoS (SCI Q1)
6	Silicon sub-wavelength grating resonator structures for gas sensor	Dr. MohammadMahdi Ariannejad, First Author	Superlattices and Microstructures	WoS (SCI Q3)
7	A high throughput and pipelined implementation of the LUKS on FPGA	Prof. Dr. Li Xiaochao, First Author Ir. Ts. Dr. Wong Shen Yuong, Corresponding Author	Journal of Circuits, Systems and Computers	WoS (JCR Q3)
8	A low-offset low-power and high-speed dynamic latch comparator with a preamplifier-enhanced stage	Dr. Mohammad Arif Sobhan Bhuiyan, Co-Author	IET Circuits, Devices & Systems	WoS (SCI Q3)
9	CMOS series-shunt single-pole double-throw transmit/receive switch and low noise amplifier design for internet of things based radio frequency identification devices	Dr. Mohammad Arif Sobhan Bhuiyan, First and Corresponding Author Dr. Khairun Nisa' Minhad, Corresponding Author	Informacije MIDEM	WoS (SCI Q4)
10	A 0.35 μm low-noise stable charge sensitive amplifier for silicon detectors applications	Dr. Mohammad Arif Sobhan Bhuiyan, Corresponding Author	Informacije MIDEM	WoS (SCI Q4)
11	Review of engineering programme outcome assessment models	Ir. Dr. Liew Chia Pao, First and Corresponding Author	European Journal of Engineering Education	WoS ESCI Scopus
12	Harmonic current classification using hybrid FAM-RBF neural network	Ir. Ts. Dr. Wong Shen Yuong, Corresponding Author	Indonesian Journal of Electrical Engineering and Computer Science	Scopus
13	An efficiency improvement of flexible flow shop scheduling in automotive part company	Ir. Ts. Dr. Wong Shen Yuong, Co-Author	Intelligent Decision Technologies	WoS ESCI Scopus
14	Design of a low-power compact CMOS variable gain amplifier for modern RF receivers	Dr. Mohammad Arif Sobhan Bhuiyan, Co-Author	Bulletin of Electrical Engineering and Informatics	Scopus
Year 2019				
No.	**Title**	**Author**	**Publisher**	**Category**
1	Background offset calibration for comparator based on temperature drift profile	Prof. Dr. Li Xiaochao, First Author	IEEE Transactions on Circuits and Systems II: Express Briefs	WoS (SCI Q1)
2	Hybrid data regression model based on the generalized adaptive	Ir. Ts. Dr. Wong Shen Yuong, First Author	IEEE Access	WoS (SCI Q1)

	resonance theory neural network			
3	Realization of a hybrid locally connected extreme learning machine with DeepID for face verification	Ir. Ts. Dr. Wong Shen Yuong, First Author Prof. Dr. Li Xiaochao, Corresponding Author	IEEE Access	WoS (SCI Q1)
4	Design architectures of the CMOS power amplifier for 2.4 GHz ISM band applications: An overview	Dr. Mohammad Arif Sobhan Bhuiyan, First and Corresponding Author	Electronics	WoS (SCI Q2)
5	High-throughput and area-efficient fully-pipelined hashing cores using BRAM in FPGA	Prof. Dr. Li Xiaochao Corresponding Author	Microprocessors and Microsystems	WoS (JCR Q3)
6	Nano CMOS charge pump for readerless RFID PLL	Dr. Mohammad Arif Sobhan Bhuiyan, Co-Author	Informacije MIDEM	WoS (SCI Q4)
7	A hybrid algorithm of interval type-2 fuzzy logic system and generalized adaptive resonance theory for medical data classification	Ir. Ts. Dr. Wong Shen Yuong, Corresponding Author	Intelligent Decision Technologies	WoS ESCI Scopus
8	High-resolution time to digital converter in 0.13 μm CMOS process for RFID phase locked loop	Dr. Mohammad Arif Sobhan Bhuiyan, Co-Author	Journal of Engineering Science and Technology	Scopus
9	Advancement of CMOS transimpedance amplifier for optical receiver	Dr. Mohammad Arif Sobhan Bhuiyan, Co-Author	Transactions on Electrical and Electronic Materials	Scopus
10	Preparation of Cu in Se2 thin films by using various methods (a short review)	Dr. Mohammad Arif Sobhan Bhuiyan, Co-Author	Oriental Journal of Chemistry	Scopus
Year 2018				
No.	**Title**	**Author**	**Publisher**	**Category**
1	CMOS transmitters for 2.4-GHz RF devices: Design architectures of the 2.4-GHz CMOS transmitter for RF devices	Dr. Mohammad Arif Sobhan Bhuiyan, Co-corresponding Author	IEEE Microwave Magazine	WoS (SCI Q2)
2	A fully integrated high IP1dB CMOS SPDT switch using stacked transistors for 2.4 GHz TDD transceiver applications	Dr. Mohammad Arif Sobhan Bhuiyan, Corresponding Author	Springer	WoS (SCI Q4)
3	Performance evaluation of feed forward neural network for image classification	Dr. Mohammad Arif Sobhan Bhuiyan, Co-Author	Journal of Science and Technology	Scopus
4	Advances in active inductor based CMOS band-pass filter	Dr. Mohammad Arif Sobhan Bhuiyan, Co-Author	Micro and Nanosystems	Scopus
5	Genetic algorithm fuzzy logic for medical knowledge-based pattern classification	Ir. Ts. Dr. Wong Shen Yuong, Co-Author	Journal of Engineering Science and Technology	WoS ESCI Scopus

Book Publications

Year 2021				
No.	**Title**	**Role**	**Category**	**Publisher**
1	Marking the Mark. George Spencer Brown's operator across the disciplines	Dr. Mohammad Arif Sobhan Bhuiyan, Co-Author	Book	George Spencer Brown's
For The Year 2019				
1	RF systems, circuits and components	Dr. Mohammad Arif Sobhan Bhuiyan, Co-Editor	Book	BoD–Books on Demand
For The Year 2018				
1	PLL Architecture: Engineer's Choice	Dr. Mohammad Arif Sobhan Bhuiyan, Author	Book	BoD–Books on Demand

Conferences

No	Article Title	Organizer	Name, Role	Conference / Seminar	Date
1	Using web-based visual aids and assignment in enhancing student's learning in materials engineering course	IEEE TALE, Japan	Ir. Dr. Liew Chia Pao, Co-Author	IEEE International Conference on Teaching, Assessment, and Learning for Engineering	2021
2	Assessments of autonomic nervous system biomarker for emotion recognition using electrodermal activity signal	IEEE-EMBS Malaysia	Dr. Khairun Nisa' Minhad, First and Corresponding Author Dr. Mohammad Arif Sobhan Bhuiyan, Co-Author	IEEE-EMBS Conference on Biomedical Engineering and Sciences	2021
3	CMOS LNA for IoT RFID	AI Unit UMS and Osaka Institute of Technology (OIT)	Dr. Mohammad Arif Sobhan Bhuiyan, First and Corresponding Author Dr. Khairun Nisa' Minhad, Co-Author	IEEE 2nd International Conference on Artificial Intelligence	2020
4	Microswitch in 0.13 µm CMOS process for IoT device transceivers	IAER, Registered CIC, England and Wales	Dr. Mohammad Arif Sobhan Bhuiyan, First and Corresponding Author Dr. Khairun Nisa' Minhad, Co-Author	International Conference on Computing, Networking, Telecommunications	2020
5	Linear and nonlinear terahertz three-dimensional dirac nano-plasmonic waveguides	IEEE AP/MTT/EMC	Dr. Mohammad Arif Sobhan Bhuiyan, Co-Author	IEEE International RF and Microwave Conference (RFM)	2020

6	Traffic management guided by the circuit model of urban traffic networks	IEEE Sarawak Subsection	Dr. Mohammad Arif Sobhan Bhuiyan, Co-Author	IEEE 8th R10 Humanitarian Technology Conference	2020
7	Smart traffic systems guided by principles of traffic circuit theorems	IEEE Sarawak Subsection	Dr. Mohammad Arif Sobhan Bhuiyan, Co-Author	IEEE 8th R10 Humanitarian Technology Conference	2020
8	Implementation of generators and artificial intelligence detection methods in gyms to reduce the electrical energy used in a building	XMUM and IEREK	Dr. Khairun Nisa' Minhad, Co-Author and Corresponding Author	3rd Future Smart Cities (FSC) International Journal on Proceedings of Science and Technology	2020
9	Classification of the harmonic load types using multi-layer extreme learning machine	UMPEDAC	Ir. Ts. Dr. Wong Shen Yuong, First Author	IET International Conference on Clean Energy and Technology	2019
10	Hybrid genetic algorithm based fuzzy inference system for data regression	IEEE CSSS Chapter Malaysia, and UiTM	Ir. Ts. Dr. Wong Shen Yuong, First Author	IEEE Conference on Systems, Process and Control (ICSPC)	2018

3. Patents of Inventions

The summary of the patent of inventions acquired by the EEE academic staff are listed in the following tables.

No.	Patent Title	Patent Number	Name, Role	Date
1	Background Offset Drift Calibration Circuit and Method for Comparator	US10862494B2	Prof. Li Xiaochao, First Inventor	Dec. 8, 2020
2	The Implementation on SHA-512 Fully Pipelined Architecture Based on The Block RAM on Chip	ZL201810587475.3/ CN108959168B	Prof. Li Xiaochao. First Inventor	Sept. 18, 2020
3	PGP Key Management Authentication Password Recovery Algorithm Implementation on FPGA, Patent of Invention	ZL201810734669.1/ CN108900307B	Prof. Li Xiaochao, First Inventor	Mar. 24, 2020

EDITORIAL TEAM