Adaptive Data Radio for 5G LoRAWAN based future Internet of Things

Training Programme

by

Faculty of Engineering, Multimedia University

Overview

Nowadays, LoRaWAN has become a more prominent technology for long-range communication of ultra-powered devices. This requires the need to better allocate resources for better network performance. LoRa hardware is considered the most efficient hardware in wireless technology for the transmission of data packets. It uses a scheme of Spreading Factor (SF) to allocate the nodes present in the surrounding. Most of the wireless technologies have a limited range and can't transmit data efficiently. Among these wireless devices, LoRa transmits the data packet over long distances with the help of the bandwidth allocated to it. Although it is efficient wireless technology, it uses the Adaptive Data Rate (ADR) mechanism that allows adjusting the Spreading Factor (SF) and the transmission power (TP) for the various nodes. From the wireless point of view, it is evident that LoRaWAN can accommodate cellular and Wi-Fi technology. Hence, it is essential to learn an algorithm that can help to accommodate the resources as well as allow the transmission of the signal in all environment scenarios without sacrificing performance. In this training, participant will learn on the optimized algorithm that provides an efficient LoRa signal transmission in all environment scenarios without sacrificing performance. In this training, we have provided the simulation results of LoRa hardware using MATLAB which shows the evaluation of LoRa performance under a dense environment.

Objective

This workshop is expected to provide a good solid fundamental on the EDGED algorithm that can help to make the LoRa signal efficient for transmission through a dense wireless medium for better signal performance which is important to deploy 5G which is demanded by Telco.

Target Audience

UG student, PG student, researcher, technician, engineer.

Prerequisite

None.

Training Methodology

Virtual Training.

Course Duration

2 days only (4 hours per day).

Content/Outline

1.LoRa, LoRaWAN
2.the Spreading Factor
3.transmission power (TP)
4.EDGED algorithm
5.Extensive knowledge involved and what is implemented currently?
6.Tentative: Morning (Theory and Concept), Afternoon (Hands-on and Practical)

Course Instructors

Assoc. Prof. Ts. Dr. Mardeni Bin Roslee

Assoc. Prof. Ts. Dr. Mardeni Roslee serve as Deputy Director of Research Management Centre and as an academician under Faculty of Engineering, Multimedia University, Cyberjaya, Malaysia and he is a Chairman for Centre of Wireless Technology, Multimedia University. From 2019-2020, he was a Chairman of IEEE Malaysia Comsoc/VTS and Vice Chair of Malaysian Radar & Navigations, Malaysian Society for Engineering & Technology. He is the CEO and main founder of Armada Smart Tech MR Sdn Bhd. He is a registered Chartered Engineer with Engineering Council United Kingdom, and Member with The Institution of Engineering and Technology (IET), UK. His experiences include consultation, professional institution and academic sectors. His current research interests are 5G/6G wireless communication, satellite, Internet of Things. He is the consultant for international, private and government sectors and as the principal investigator of research grants of industry, local and international level. His contributions to academic and the engineering profession over the years have earned him recognition nationally and internationally, he is the recipient of University Excellent Researcher Award for 2016 and 2018, Excellence in European Creativity Special Award 2018, World Invention Special Award 2019, and awarded Top Research Scientist in Malaysia 2020 from Academy of Science Malaysia.

Administrative Details

Programme Logistics

Duration: 2 days (4 hours per day).

Dates, registration deadline and registration form:
Please refer to: https://www.mmu.edu.my/foe/short-courses/

Your Investment

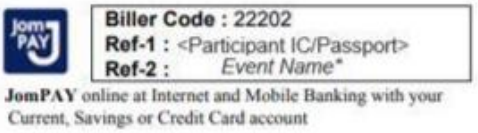
Condition		Price per Pax
Regular Fee	Students / MMU Alumni/ IEEE Students	RM500
	Public	RM800
	Public (Group >5 pax)	RM600
	IEM/IEEE Members	RM700
Early Bird Fee	Students / MMU Alumni/ IEEE Students	RM300
	Public	RM600
	Public (Group >5 pax)	N/A
	IEM/IEEE Members	RM500

Method of Payment

Please refer to the next page.

<table>
<tr><th>Type of Payment</th><th>Method</th><th>Details</th></tr>
<tr><td rowspan="2">Local Transaction / Payment within Malaysia</td><td>Online Payment with JomPay</td><td>

To get started, login to any preferred internet banking.
Look for JomPay to begin the payment process.
Enter Ref 1 & Ref 2.



* Ref. 2: FOE5Gdynamic
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To get started, go to MMU website (https://www.mmu.edu.my/) > Admission > Financial Info > Payment Channel > Non Student ;

or scan the QR code below to begin the process:


Choose Category: Public Training
Workshop Name
Choose Your Participant Type:

✓ STUDEN (MMU, IEEE, IEM, Other Higher Learning Institution)
✓ PUBLIC
✓ GROUP (Group > 5 Pax)
✓ IEEE/M (IEEE/IEM Members)

</td></tr>
</table>

Type of Payment	Method	Details
International Payment / Payment outside Malaysia	Online payment with Flywire	• To get started, go to mmulanding.flywire.com; or scan the QR code to begin the payment process: SCAN ME • Choose Conference for Non-students related

Note:

Please submit the proof of payment to organizer for clearance updating purposes within 2 working days.

Refund and Cancellation

Any refunds will be processed in 60 days. Should there be any cancellation, it may be due to the organizer not getting the minimum participants or the participant failing to attend the workshop due to unavoidable reason.

Disclaimer

Faculty of Engineering, Multimedia University reserves the right to change the instructors, date and to vary/cancel the programme should unavoidable circumstances arise. All effort will be taken to inform participants of the changes. Upon submission of the registration form, you are deemed to have read and accepted the terms.

Enquiries

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