



Resource Allocation of NOMA in Velocity Based Cellular 5G Network

Training Programme

by

Faculty of Engineering, Multimedia University

Overview

Nowadays, increasing in wireless communication users urged the revision and development of new telecommunication technologies. Fifth generation (5G) networks standardization efforts and its stringent coverage and capacity requirements, set to provide an unlimited user experience. The number of users is limited due to the limitation of orthogonal resources. More radio resources to the user with a good channel condition may degrade the system performance because of inadequate resources utilisation for the user with a weak channel condition. Thus, it is demanded to achieve balanced sum rate for multiuser system. In this training, a new Non-orthogonal multiple access (NOMA) is introduced which able to serve a great number of users due to resource sharing in 5G network. The bandwidth is accessible for all available users also the radio resources is offering priority for all users regardless of their channel condition and NOMA Can offer balanced throughput. In this training, participant will learn about the base station which assigns the two users on the same frequency, or code or time based on allocating different power levels for these users. In downlink transmission, the Superposition coding is applied at the base station to superpose the signal of the two users on a linear combination signal before transmitting it simultaneously.

Objective

This workshop is expected to provide a good solid fundamental on the novel Simulated Annealing standalone algorithm which includes user-subchannel matching, power allocation across subchannels, power allocation among multiplexed users on the same subchannel 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. Non-orthogonal multiple access (NOMA)
2. Channel condition
3. Superposition coding
4. Successive interference cancellation mechanism
5. Resource allocation
6. Extensive knowledge involved and what is implemented currently?
7. 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.

Type of Payment	Method	Details
Local Transaction / Payment within Malaysia	Online Payment with JomPay	<ul style="list-style-type: none"> To get started, login to any preferred internet banking. Look for JomPay to begin the payment process. Enter Ref 1 & Ref 2. <div style="border: 1px solid black; padding: 5px; width: fit-content;">  <p> Billor Code : 22202 Ref-1 : <Participant IC/Passport> Ref-2 : <i>Event Name*</i> </p> </div> <p>JomPAY online at Internet and Mobile Banking with your Current, Savings or Credit Card account</p> <p><i>*Ref. 2: FOE5Gdynamic</i></p>
		<ul style="list-style-type: none"> To get started, go to MMU website (https://www.mmu.edu.my/) > Admission > Financial Info > Payment Channel > Non Student ; E-Payment To begin the payment process, please click Student or Non Students <div style="border: 1px solid gray; padding: 5px; width: fit-content;">    <p>Student Non-Student</p> </div> <p>or scan the QR code below to begin the process:</p> <div style="text-align: center;">  <p>SCAN ME</p> </div> <ul style="list-style-type: none"> Choose Category: Public Training Workshop Name Choose Your Participant Type: <ul style="list-style-type: none"> ✓ STUDEN (MMU, IEEE, IEM, Other Higher Learning Institution) ✓ PUBLIC ✓ GROUP (Group > 5 Pax) ✓ IEEE/M (IEEE/IEM Members)

Type of Payment	Method	Details
International Payment / Payment outside Malaysia	Online payment with Flywire 	<ul style="list-style-type: none"> To get started, go to mmulanding.flywire.com; or scan the QR code to begin the payment process: <div style="text-align: center;">  </div> <ul style="list-style-type: none"> 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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