CSIS Center for Spatial Information Science The University of Tokyo



GNSS for Policy and Decision Makers 21st January 2022

GNSS Education Activities The University of Tokyo

Dinesh Manandhar, Associate Professor (Project)

Center for Spatial Information Science (CSIS), The University of Tokyo

dinesh@csis.u-tokyo.ac.jp





Overview

- Research on GPS/GNSS and Related Fields
 - GNSS Signal Design and Signal Analysis
 - GNSS Authentication System Development
 - To protect from Spoofing attacks
 - Indoor Navigation System
 - E.g. IMES (Indoor Messaging) for Indoor Navigation
 - Integration with other sensors such as UWB, WiFi, BT
 - Software Defined Radio or Software Receiver
 - Low-Cost High-Accuracy GPS Receiver System Development
 - Develop receiver systems that costs less than \$100 to provide accuracy better than 100cm
- Conduct Lectures, Trainings, Seminars, Workshops, Webinars
 - Basically in Asian countries
- Joint research, pilot projects with Universities, Companies and Organizations





GNSS Trainings, Workshops and Seminars

- Conduct GNSS Trainings, Workshops and Seminars
 - Basically in Asian countries
 - Indonesia, Laos, Malaysia, Myanmar, Nepal, Thailand, The Philippines, Vietnam
 - Bangladesh, India, Singapore, Sri Lanka (?) (planned in 2019)
 - Also, Some African Countries
 - Mozambique, Rwanda
- Regular Training is conducted at AIT in JAN every year with support from ICG/UNOOSA
 - Training in January, 2018
 - <u>https://home.csis.u-tokyo.ac.jp/~dinesh/T141_30.htm</u>
 - Training in January, 2019
 - https://home.csis.u-tokyo.ac.jp/~dinesh/GNSS_Train.htm
 - Training in January, 2020 (Travel only funding)
 - Training in January, 2021 (Online)
 - Training in January, 2022 (Hybrid)
 - Local Host, CSSGS, Pokhara, Nepal
 - FaceBook: https://www.facebook.com/gnss.lab

CSistivities to Promote GNSS Technology Abroad: Establish Asian Base-Station Network 惠家大学

Country	Place	University	Receiver Type		e
			GNSS	GNSS/MADOCA	MADOCA Low Cost
Indonesia	Jakarta	University of Indonesia NetR9 MSJ		Yes	
Japan	Tokyo-A	The University of Tokyo	NetR9	NA	Yes
Japan	Tokyo-B	Tokyo University of Marine Science & Tech.	NetR9	MSJ	Yes
Japan	Tokyo-C	KEIO University	NetR9	NA	Yes
Laos	Vientiane	National University of Laos	NetR9	NA	SW only
Malaysia	Kuala Lumpur	Malaysia Japan International Institute of Tech.	NetR9	MSJ	Yes
Myanmar	Yangon	Yangon Technological University	NetR9	NA	SW only
Thailand	Bangkok	Chulalongkorn University	NetR9	MSJ	Yes
Thailand	Pathumthani	Asian Institute of Technology	NetR9*	NA	Yes
Philippines	Manila	University of the Philippines	NetR9	MSJ	Yes
Vietnam	Ho Chi Minh City	International University	NetR9	MSJ*	Yes
Mozambique	Maputo	Universidade Eduardo Mondlane	NetR9	NA	NA
Singapore	Singapore	Nanyang Technological University	NA	MSJ	Yes
Australia	Perth	Curtin University	NA	MSJ	Yes

Dinesh Manandhar, CSIS, The University Ages MADGCA's Low Cost Receiver and Software will be provided

Center for Spatial Information Science



GNSS Training organized at AIT, Thailand every year in JAN from 2018 – 2020, jointly organized with ICG/UNOOSA and AIT







University of Indonesia, Aug 2017



Yangon Technological University, Myanmar



International University, HCM City, Vietnam



GNSS Training in Laos, Feb 2018,



GNSS Seminar in 2016, 2017 and 2018 National Institute of Metrology, Thailand (NIMT)

a



ac. International University, HCM City, Vietnam

Slide : 5





GNSS Training, Workshops, Lectures etc.

		Country	2017	2018	2019	2020	Total Number of Trainees
		Indonesia	Training, Lectures	Training, Lectures		Training, Online Lectures	100+
		Vietnam	Training, Lectures		Training		70+
		Thailand	Training, Lectures	Training, Lectures	Training, Lectures	Training, Lectures	400+
ABN	Ą	Malaysia	Training, Lectures		Training		50+
	MADOCA	Myanmar	Training, Lectures	Training, Lectures			50+
		Philippines	Training, Lectures	Training, Lectures	Training, Lectures	Training, Lectures	200+
		Laos	Training, Lectures		Training		100+
		Singapore			Seminar, Workshop		50+
		Australia				Training	30+
		Mozambique		Training, Lectures	Training		50+
		India				Lectures	60+
		Nepal	Training, Lectures	Training, Lectures	Workshop, Lecture	Lecture	300+
		Egypt				Training, Lectures	50+





GNSS Training : Jointly Organized with ICG/UNOOSA

Participants Information	ONI JAN 2021 19 – 21 JAN	JAN 2021 28 JAN	JAN 2020	JAN 2019	JAN 2018
	Course A	Course B	T-151	T-151/T- 131	T-141
Number of Participants	150+	100+	71	94	67
Applicants	360 (270 Selected)	190 (160 Selected)	160+	180+	80+
Number of Countries	70+	60+ tbc	15	15	15



Dinesh Manandhar, CSIS, The University of Tokyo, dinesh@iis.u-tokyo.ac.jp



- Organized by Survey Dept. of Nepal and UNOOSA/ICG
- Total 154 participants from 32 different countries
- 66 International participants from 31 countries
- 25 International participants were fully funded by ICG
- Full Five days workshop including ICG's IDM WG Meetings





Dinesh Manandhar, CSIS, The University of Tokyo, dinesh@iis.u-tokyo.ac.jp