

## 2<sup>nd</sup> UNDERGRADUATE COLLOQUIUM



January 21, 2021

Faculty of Geomatics

Organized by  
Faculty of Geomatics  
Sabaragamuwa University of Sri Lanka  
PO Box 70140  
Belihuloya, Sri Lanka

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## 1. OUTLINE OF THE EVENT

List of Invitees:	Vice Chancellor Dean of the Faculty Heads of Departments Coordinator of the Research Unit Session Chairpersons All Staff
Guest of Honour:	Dr. Lal Muthuwatta Senior. Regional Researcher – Hydrological Modeling/ Remote Sensing, International Water Management Institute (IWMI)
Plenary Speaker :	Associate Prof. Dr. D.G. Rossitor Cornell University, United States
Keynote Speaker:	Prof. Dr. Markus Gerke, Technische Universität Braunschweig, Germany
Sessions:	Professional Session Undergraduate Session
Venue:	Faculty of Geomatics Premises
Day Outline:	0825h – Arrival of Guests 0830h – Inauguration Session 1000h – Refreshment 1015h – Professional Session 1250h – Lunch Break 1345h – Technical Sessions (Undergraduate) 1645h – End

## 2. MESSAGE FROM THE VICE CHANCELLOR

It is contended to convey my heartfelt congratulations to the Faculty of Geomatics for organizing GEOSYM2020 amidst the Covid-19 epidemic.

The student research symposium is a timely and virtual platform for young innovators to position themselves in the global field of research and academia. The initiative of GEOSYM enhances the potentiality and innovativeness of the undergraduates by motivating them to engage in novel researches and coming up with neoteric findings is a milestone for their future career. This forum is a pinnacle of the undergraduate quadrennial period of learning and training and it promulgates the scientific knowledge and experience to the global community.

The effort, encouragement and dedication the students had on the research work despite the crucial situation of the country should be highly appreciated.

I hope that the student would pursue their dreams and aspirations by continuing their motivation and interests. The experiences they attain in these consecutive four years will sharp their lives as responsible citizens in upcoming years.

Finally, I wish to thank the Dean, Heads of the Departments, Chairperson, Secretary and the members of the Organizing Committee who contributed to the success of GEOSYM 2020.

Prof. Udaya Rathnayaka  
Vice-Chancellor  
Sabaragamuwa University of Sri Lanka

### 3. MESSAGE FROM THE DEAN

It is with great pleasure and honour that I welcome you all to the 2<sup>nd</sup> Undergraduate Colloquium (GEOSYM 2020) of the Faculty of Geomatics, Sabaragamuwa University of Sri Lanka to be held on 21<sup>st</sup> January 2020 at the faculty premises. We started this academic activity in 2019 with the view of providing a platform to all the final year students to celebrate their research achievements. I am happy to note that today this event has grown to be a major academic event conducted by the faculty to exchange and share experiences and research findings among the research scholars, academic staff and students of the faculty. I am confident that this symposium will be a major annual event for disseminating high quality research, networking, fostering interaction and exchanging ideas among professionals, researchers, academics and students in the field of spatial science.

Research for new knowledge is one among the three essential functions of a university, the other two functions being teaching/training and community service. Universities in the country are required to be in the forefront of this drive towards creation of new knowledge. In the view of supporting this, GEOSYM 2020 is focused to encourage young researchers by providing a forum to share their insights into the recent research and cutting edge technologies. I am confident that the students of the Faculty of Geomatics are delighted to have this event annually since this is their first experience of disseminating research findings in the forum of experts and colleagues. Further, I believe that this academic activity will enhance the image of the Faculty of Geomatics and Sabaragamuwa University of Sri Lanka as research is an essential and integral part of teaching at the University level.

In concluding, I would like to thank the research unit of the Faculty of Geomatics for their dedication towards successfully organizing GEOSYM 2020. Also, I would like to express my gratitude to all the invited speakers, guests and presenters whose contribution has enlightened this event. I hope that you will enjoy the sessions by sharing the excitement of doing research and presenting your findings.

I wish you all a fruitful academic experience at the GEOSYM 2020.

Dr. H.M.I. Prasanna  
Dean, Faculty of Geomatics  
Sabaragamuwa University of Sri Lanka

## 4. ORGANIZING COMMITTEE

### ADVISORY COMMITTEE

- Dr. HMI Prasanna - Dean, Faculty of Geomatics
- Dr. Saman Koswatte - Head, Department of RSGIS
- Mr. Vipula Abeyaratne - Head, Department of Surveying and Geodesy
- Dr. H Divithure (Coordinator – Research Unit)

### STEERING COMMITTEE

- Dr. H Divithure (Coordinator – Research Unit)
- Ms. Kalani Illeperuma
- Dr. G Sanka N Perera
- Mrs. D Samanthi Munasinghe
- Ms. Prabodha Madhavi

### EDITORIAL BOARD

- Dr. G Sanka N Perera
- Dr. Eranda Gunathilake
- Dr. Ranmalee Bandara

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## TECHNICAL COMMITTEE

- Dr. Indika Pussella
- Dr. Surangi Bandara
- Dr. Nishamanie Ranasinghe
- Dr. Saman Koswatta
- Mr. Vipula Abeyratne
- Mr. Charith Karadana
- Mr. Dilshan Jayathilake
- Mr. Darshaka Gomesz
- Mr. Roshan Sawanawadu
- Ms. Kalani Randima
- Mr. P. Thunendran
- Mr. Gayan Nilanjana
- Mr. Gayan Kandegedara
- Mr. Amila Wickramasinghe
- Mr. Dinuka Dissanayake
- Mr. Rasika Thanusha



## 5. AGENDA OF THE EVENT

GEOSYM 2020 - AGENDA								
Date	Time	Content						
21 <sup>st</sup> January 2021 Tuesday	0825	Arrival of Guests						
	0830-1000	0830-0835	Lighting the Traditional Oil Lamp					Inauguration Ceremony
		0840-0850	Welcome Speech – Dean, Faculty of Geomatics					
		0850-0910	Speech by Dr. Lal Mutuwatta, IWMI - Guest of Honour					
		0910-0920	Speech by Vice Chancellor - SUSL					
		0920-0950	Keynote Speech by Prof. Dr. Markus Gerke					
		0950-0955	Vote of Thanks – Coordinator, Research Unit					
	1000-1015	Refreshment						
	1015-1250	Professional Session (PS)						
	1250-1345	Lunch Break						
1345-1645	Technical Sessions ( Parallel Sessions )							
	TS I	TS II	TS III	TS IV	TS V	TS VI	TS VII	

## GEOSYM 2020 - SESSION OVERVIEW

Date	Time	Session	Subject Area	Chairperson	Panel of Judges
21 <sup>st</sup> January 2021 Thursday	1015-1250	PS	Open	Chair: Dr. HMI Prasanna Rapporteur: Dr. GSN Perera	
	1345-1645	TS I	Geodesy and Hydrography	Mr. Vipula Abeyaratne Rapporteur: Ms. MLM Dissanayake	Dr. H Divithure Mr. AND Perera Mr. P Thunendran
		TS II	Integrated Surveying	Dr. Eranda Gunathilake Rapporteur: Ms. KKPM Kankanamge	Mr. TDA Gomez Mrs. Samantha Munasinghe Mrs. KHJI Yasarathn
		TSIII	Application of GNSS	Dr. Nishamanie Ranasinghe Rapporteur: Ms. MASJ Sewwandi	Dr.HMI Prasanna Mr. CA Karandana Mrs. Geethika Ranasinghe
		TSIV	Remote Sensing	Dr. HRS Bandara Rapporteur: Ms. Binuri Thotagamuwa	Dr. Indika Pussella Ms. Kalani Randima Mr. KMG Nilanjana
		TSV	GIS	Dr. Saman Koswatte Rapporteur: Mrs. KDH Upendra	Mrs. JAS Jayakody Dr. HA Nalani
		TSVI	GIS and Land Surveying	Dr. GSN Perera Rapporteur: Ms. WLRC Lekamge	Mrs. Kalani Illeperuma Mr. Dilshan Jayathilake Ms. Daupadie Iddagoda
		TS VII	Land Management	Dr. Vishaka Hidallage Rapporteur: Ms. KPMP Senarathne	Dr. Milinda Piyasena Dr. Surangi Bandara Ms.AMT Nadeeka

## 6. SESSIONS OUTLINE

### INAUGURATION SESSION

Venue: Main Auditorium, Faculty of Geomatics

Mode: Physical / Virtual with Zoom Live

Time: From 0830h - 1015h

#### Outline:

- 0825h - Arrival of the guests
- 0830h - Lightening the Traditional Oil Lamp
- 0835h - National Anthem
- 0840h - Welcome Address by Dr. Indika Prasanna, Dean - Faculty of Geomatics
- 0850h - Address by Dr. Lal Muthuwatta- IWMI-Guest of Honour
- 0910h - Address by Prof. Udaya Rathnayaka, Vice Chancellor, Sabaragamuwa University of Sri Lanka
- 0920h - Keynote address by Prof. Dr. Markus Gerke (Online)
- 0950h - Vote of thanks by Dr. H Divithure, Coordinator, Research Unit
- 0955h - University Song
- 1000h - Refreshment

## PROFESSIONAL SESSION

Subject Areas: Open

Venue: Main Auditorium, Faculty of Geomatics

Mode: Physical / Virtual with Zoom Live

Time: From 1015h -1250h

Session Chairman: Dr. HMI Prasanna

Rapporteur: Dr. GSN Perera

### List of Presenters:

No	Time	Title	Presenter
	1015 – 1045h	Plenary speech - Adjunct Professor. David Rossiter, Cornell University, United States	
01	1045 – 1105h	Detection of sea surface plastic in the northern south china sea using an end member analysis of sentinel satellite reflectance.	Ms. Kalani Randima
02	1105 – 1125h	Evaluation of airborne and marine gravity data over kattegat region.	Mr. Chrishan Fonseka
03	1125 – 1145h	Coral reef detection from landsat-8 satellite data.	Ms. Madhusha Sammani
04	1145 – 1205h	Automation of road feature extraction from high resolution images.	Ms. Prasadi Senadeera
05	1205-1225h	The impact of anomalous sea surface temperature in the tropical Indian ocean - western pacific on Sri Lankan summer monsoon precipitation.	Ms. Erandi Lakshani
06	1225-1245h	Characterization of spectral variations of seaweed species under different depth and turbidity conditions.	Mr. Kasun Indika

## TECHNICAL SESSION 1

Subject Areas: Geodesy and Hydrography  
 Venue: Main Auditorium, Faculty of Geomatics  
 Mode: Physical with Zoom Live  
 Time: From 1345h to 1645h  
 Session Chairman: Mr. Vipula Abeyaratne  
 Rapporteur: Ms. MLM Dissanayake  
 Panel of Judges: Dr. H Divithure  
                           Mr. AND Perera  
                           Mr. P Thunendran

### List of Presenters:

No	Time	Title	Presenter
01	1345 – 1400h	Validation of space-based GOCE & GRACE gravity field models using terrestrial gravity data in Sri Lanka.	USM Rodrigo
02	1400 – 1415h	Nature of the lithotectonic contact zone in Samanala Tank area between Highland series and Vijayan series: Implications from gravity data.	WWADM Wickramasinghe
03	1415 – 1430h	Impact of drift, tide and tilt correction on CG6 Autograv Gravity meter.	MPG Iresha
04	1430 – 1445h	A local gravity field modeling using terrestrial gravity data in Bandarawela.	SMNM Rajakaruna
05	1445 – 1500h	Temperature, humidity and rainfall effects on CGE gravity observations.	PIA Weerasinghe

06	1500 – 1515h	Determination and analysis of positioning accuracy for SPS on GAGAN and multi constellation over Belihuloya region.	NNM Nuwarapaksha
07	1515 – 1530h	Compilation of an electronic navigation chart utilizing paper charts with CARIS tool.	RMNP Kulathunga
08	1545 – 1600h	Assessment of tidal effect on gravity measurements at coastal areas.	JPKM Jayasinghe
09	1600 – 1615h	Geo-physical investigation of reservoir bed using sub bottom profile.	HMSP Abeyrathna
10	1615-1630h	Side scan sonar imagery interpretation using Hypack software.	EGKC Hisara

## TECHNICAL SESSION II

Subject Areas:            Integrated Surveying  
 Venue:                      Class Room I, Faculty of Geomatics  
 Mode:                        Physical with Zoom Live  
 Time:                         From 1345h to1645h  
 Session Chairman:        Dr. Eranda Gunathilake  
 Rapporteur:                Ms. KKPM Kankanamge  
 Panel of Judges:         Mr. TDA Gormaz  
                                      Mrs. Samantha Munasinghe  
                                      Mrs. KHJI Yasarathna

### List of Presenters:

No	Time	Title	Presenter
01	1345 – 1400h	Accuracy analysis for Total station based on the reflector-less distance measurements.	PRR Dissanayaka
02	1400 – 1415h	Analysis of atmospheric effects on EDM.	MIM Ibthisam
03	1415 – 1430h	Customization CAD for handling bulk surveying data.	GN Kumara
04	1430 – 1445h	Establishing control network by using different surveying methods for deformation monitoring.	R Inthuja
05	1445 – 1500h	Ionospheric variations over Sri Lanka region and its impact on GNSS observations accuracy.	K Nareng

06	1500 – 1515h	Analysis of Multipath effect in Sri Lanka CORS network by using TEQC.	S Nivjan
07	1515 – 1530h	Uncertainty of area calculation.	DDL Amarasena
08	1545 – 1600h	Application of Kalman Filtering for dynamic GNSS objects.	HMSM Dhanawardhana
09	1600 – 1615h	Application of Kalman Filtering for moving objects.	HGEL Gamage
10	1615 – 1630h	Study in the error propagation of datum transformation between SLD99 and Kandawala old.	WGC Pramuditha



## TECHNICAL SESSION III

Subject Areas:           Application of GNSS

Venue:                    Class Room II, Faculty of Geomatics

Mode:                     Physical with Zoom Live

Time:                     From 1345h to1645h

Session Chairman:    Dr. Nishamanie Ranasinghe

Rapporteur:            Ms. MASJ Sewwandi

Panel of Judges:     Dr. HMI Prasanna  
                               Mr. CA Karandana  
                               Mrs. Geethika Ranasinghe

List of Presenters:

No	Time	Title	Presenter
01	1345 – 1400h	Vehicle accident detection and warning system for Sri Lanka using GNSS technology.	K Kapilan
02	1400 – 1415h	Real-time position tracking of indoor games player based on radio frequency (RF) and Ultrasonic (US).	K Sarankan
03	1415 – 1430h	Investigation on positioning error of Total station due to the ground vibration.	T Sathurjan
04	1430 – 1445h	Replacing missing information of an as-built surveying using RTK GNSS data.	T Dilukshan

05	1445 – 1500h	Can Microgravity identify underground tunnels? A case study of Moragahak and a Kaluganga Tunnel.	HHJ Nadunika
06	1500 – 1515h	Accuracy of Hand-held GPS comparing with Total Station in land use survey.	HAIM Jayasekara
07	1515 – 1530h	Effect of environmental surrounding on accuracy and precision of Total Station measurements.	WHAM Priyankara
08	1545 – 1600h	Effect of multipath errors on the accuracy of C/A code DGPS positioning.	WVL Warnakulasooriya
09	1600 – 1615h	Evaluation of vertical accuracy for GAGAN corrections and applicability of XGM 2016 geopotential model for improved vertical accuracies.	DMSUK Dissanayaka

## TECHNICAL SESSION IV

Subject Areas: Remote Sensing

Venue: Class Room III, Faculty of Geomatics

Mode: Physical with Zoom Live

Time: From 1345h to 1645h

Session Chairman: Dr. HRS Bandara

Rapporteur: Ms. Binuri Thotagamuwa

Panel of Judges: Dr. Indika Pussella  
Ms. Kalani Randima  
Mr. KMG Nilanjana

### List of Presenters:

No	Time	Title	Presenter
01	1345 – 1400h	Building extraction from low cost UAV images.	RR Gamage
02	1400 – 1415h	Estimation of surface temperature using Landsat data- Case study Northern Province.	A Sinthujan
03	1415 – 1430h	Land degradation assessment using Geo-information technology for Wilpattu area in Sri Lanka.	S Sujean
04	1430 – 1445h	Automatic building façade feature extraction from terrestrial laser scanning (TLS) point clouds.	IM Jabris
05	1445 – 1500h	Bathymetry mapping of Hikkaduwa coral reefs area using multispectral satellite imagery.	PVU Kalpana

06	1500 – 1515h	Mapping and analysis of land use/ land cover change in Kalani watershed.	SPHP Perera
07	1515 – 1530h	An integrated approach towards the mapping of groundwater potential zone in Killinochchi and Mulativu by remote Sensing and GIS.	S Rangeetha
08	1545 – 1600h	Can an electronic scarecrow help save endangered elephant.	M Thuvarahan
09	1600 – 1615h	Positional accuracy assessment of low-cost UAV data.	SMDL Senavirathna
10	1615 – 1630h	A case study analysis and modeling of elephant migration in Sri Lanka by using Remote Sensing.	E Vinojan

## TECHNICAL SESSION V

Subject Areas: GIS

Venue: Class Room IV, Faculty of Geomatics

Mode: Physical with Zoom Live

Time: From 1345h to 1645h

Session Chairman: Dr. Saman Koswatte

Rapporteur: Mrs. KDH Upendra

Panel of Judges: Mrs. JAS Jayakody  
Dr. HA Nalani

### List of Presenters:

No	Time	Title	Presenter
01	1345 – 1400h	Elephant and human conflict in Hambantota district.	KC Madushan
02	1400 – 1415h	Impact on forest cover change of socio-economic status of the public.	RWWMUP Wanigasekara
03	1415 – 1430h	Impact of deforestation on temperature and rainfall trends in Sri Lanka.	WAS Weerakkody
04	1430 – 1445h	Estimation of the sedimentation in kalu river basin within Ratnapura district using InVEST SDR model.	WDM Vidarshana
05	1445 – 1500h	Using GIS techniques for solar power plant selection in Hambantota district.	OGCM Gunawardana

06	1500 – 1515h	Creation of poverty map using GIS.	LAY Madumali
07	1515 – 1530h	GIS identification of potential bus stop locations and passengers access and points.	HR Nadeera
08	1545 – 1600h	Comparative accuracy analysis of long and short baseline augmentations for static GNSS observations within Belihuloya region.	RESN Yugan
10	1600 – 1615h	Coastal vulnerability zone and risk mapping for Vadamarachchi East, Jaffna.	B Ajith

## TECHNICAL SESSION VI

Subject Areas: GIS and Land Surveying  
Venue: Class Room V, Faculty of Geomatics  
Mode: Physical with Zoom Live  
Time: From 1345h to1645h  
Session Chairman: Dr. GSN Perera  
Rapporteur: Ms. WLRC Lekamge  
Panel of Judges: Ms. Kalani Illeperuma  
Mr. Dilshan Jayathilake  
Ms. Daupadie Iddagoda

List of Presenters:

No	Time	Title	Presenter
01	1345 – 1400h	Satellite based tracking system for unmanned railway crossings in Sri Lanka.	KAMS Kuruppuarachchi
02	1400 – 1415h	Indoor 3D route planning for multi-story building using BIM and GIS modeling.	MNM Arsadh
03	1415 – 1430h	Land suitability of rubber cultivation using Remote sensing and GIS approach.	S Jasikaran
04	1430 – 1445h	Quality assessment of Crowd sourced data using followers response analysis.	NAVO Kaushalye

05	1445 – 1500h	GIS based flood mapping in the Galle, Sri Lanka.	KDYS Prematunga
06	1500 – 1515h	Impact of rainfall for landslide vulnerability in Badulla district.	PGS Somasiri
07	1515 – 1530h	Accuracy analysis between Hand-held GPS enabled mobile phones.	S Jayaruban
08	1545 – 1600h	The effects cause by the atmospheric changes for Digital level and Auto level.	RIM Rasmy
09	1600 – 1615h	Analysis of atmospheric effects on EDM.	A Raguraman



## TECHNICAL SESSION VII

Subject Area: Land Management

Venue: Class Room VI, Faculty of Geomatics

Mode: Virtual with Zoom Live

Time: From 1345h to1645h

Session Chairman: Dr. Vishaka Hidallage

Rapporteur: Ms. KPMP Senarathne

Panel of Judges: Dr. NMPM Piyasena  
Dr. Surangi Bandara  
Ms. AMT Nadeeka

### List of Presenters:

No	Time	Title	Presenter
01	1345 – 1400h	Analysis of efficient and suitability for cadastral survey using GNSS.	P Jathurshan
02	1400 – 1415h	Analyze the problems of lands granted under Land Development Ordinance 1935.	GPSI Dhananjana
03	1415 – 1430h	Evaluate the different avenues to conduct the land title registration programme in sporadic manner Case study of Sri Lanka.	WAC Madusanka
04	1430 – 1445h	Evaluate the acceptability of the Title registration certificate by the financial institute in Sri Lanka.	GYM Udayanga

05	1445 – 1500h	Evaluate the applicability of Drone Surveying Techniques in to the cadastral surveying activities in Sri Lanka.	V Vibulanathan
06	1500 – 1515h	Analyze the potential of web based tools to address local governance issues.	SL Witharana
07	1515 – 1530h	Assessment of socio-economic links of a cascade system to maintain the sustainable development goal; Zero Hunger.	KSL Pabarasi
08	1545 – 1600h	Improvement options for the court commissioner involvement in the process of the court commission surveys.	GHL Nishshanka
09	1600 – 1615h	Transaction cost incur in acquisition of land information: A case study on residential investment in Colombo district.	KWM Nuwan
10	1615 – 1630h	Analyze the current land surveying profession in Sri Lanka and the stability by 2030.	KNST Feranando