



ISGNSS 2019

in conjunction with IPNT Conference

Impact of Emerging GNSS Systems on PNT

October 29(Tue) ~ November 1(Fri), 2019

Ramada Plaza Jeju Hotel, Jeju, South Korea

Program



Organized by



THE INSTITUTE OF POSITIONING,
NAVIGATION, AND TIMING



Invitation to ISGNSS 2019

The International Symposium on GNSS (ISGNSS) 2019 in conjunction with Institute of Positioning, Navigation and Timing (IPNT) Conference will be held from October 29 to November 1, 2019 in Jeju Island, South Korea. It is my pleasure to invite leading academic scholars, industrialists, researchers, and students in GNSS and related fields.

The theme of ISGNSS 2019 is Impact of Emerging GNSS Systems on PNT. Recently, the role of GNSS has been very important as the emerging industries such as autonomous vehicles and drones, which are expected to lead the fourth industrial revolution, depend significantly on high-performance PNT services. Also, multi-constellation GNSS is one of the emerging changes that provide more accurate and reliable PNT services. In this new GNSS era, the Asia-Pacific region is a “GNSS hotspot” where more GNSS signals can be received than any other region of the world. Besides the global services of GPS, GLONASS, Galileo, and Beidou, regional services of QZSS and IRNSS are also available. Furthermore, Korea Positioning System (KPS) will also be launched in the near future and is expected to enhance the Asia-Pacific's regional benefits in GNSS-related fields. As global attentions are drawn on “the world's GNSS showcase” of the Asia-Pacific region, the ISGNSS 2019 in Jeju Island is a timely and perfectly located event to understand the technical trends and to perceive the potentials of the future GNSS.

On behalf of the organizing committee, I would like to welcome all of you to the ISGNSS 2019 in conjunction with IPNT Conference. Our keynotes and plenary session, invited talks, contributed papers, and poster presentations will certainly enlarge the diversity and depth of your understanding of GNSS-related technology. The beautiful scenery of Jeju Island, a UNESCO World Heritage Site, will enhance the technical exchanges between the participants.

We look forward to seeing you in Jeju this October.

Best Regards,

March 7, 2019

Prof. Changdon Kee
General Chair of ISGNSS 2019 Organizing Committee
President of IPNT, South Korea



Committee

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Vice Chair	Prof. Hyung Keun Lee	Korea Aerospace University, Korea

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	Prof. Byungwoon Park	Sejong University, Korea
	Prof. Dong-Hui Yu	Catholic University of Pusan, Korea
	Dr. Eunsung Lee	Korea Aerospace Research Institute, Korea
	Dr. Kwang Jin Kim	Hanwha Co., Defense R&D Center, Korea

▪ Steering Committee

Chair	Dr. Wan Sik Choi	Korea Startup Research Institute, Korea
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	Prof. Chansik Park	Chungbuk National University, Korea
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	Prof. Gyu-In Jee	Konkuk University, Korea
	Dr. Moon Beom Heo	Korea Aerospace Research Institute, Korea
	Dr. Pil-Ho Park	Korea Astronomy and Space Science Institute, Korea
	Dr. Sang Hyun Park	Korea Research Institute of Ships & Ocean Engineering, Korea

General Information

1 Registration

■ On-site registration

Registration desk: Lobby in front of Ramada Ballroom (2F), Ramada Plaza Jeju

On-site registration hours as follows;

Oct. 29 (Tue) 17:00-19:30, Oct. 30 (Wed) - Oct. 31 (Thu) 08:30-18:00, Nov. 1 (Fri) 08:30-12:00

2 Registration fee

Category		On-site registration
International	Regular participant	USD 800
	Student participant	USD 450
Domestic	Regular participant	₩700,000
	Student participant	₩350,000

- **Registration method:** Credit Card / Cash

- Registration fee for participant includes Abstract book, proceeding (e-Book), Welcome reception (Oct. 29), Banquet (Oct. 30), Lunch (Oct. 30 - Nov. 1)

3 Social event

- **Welcome reception:** Oct. 29 (Tue), 19:30 / Ramada Ballroom A (2F)

- **Lunch:** Oct. 30(Wed) - Nov. 1(Fri) / Tammora, Ramada Plaza Jeju, 1F

- **Banquet:** Oct 30(Wed), 18:00 / Ramada Ballroom A, Ramada Plaza Jeju, 2F

4 Transportation

- **Website:** www.ramadajeju.co.kr/ENG/about/location.asp

- **Address:** Ramada Plaza Jeju, 66

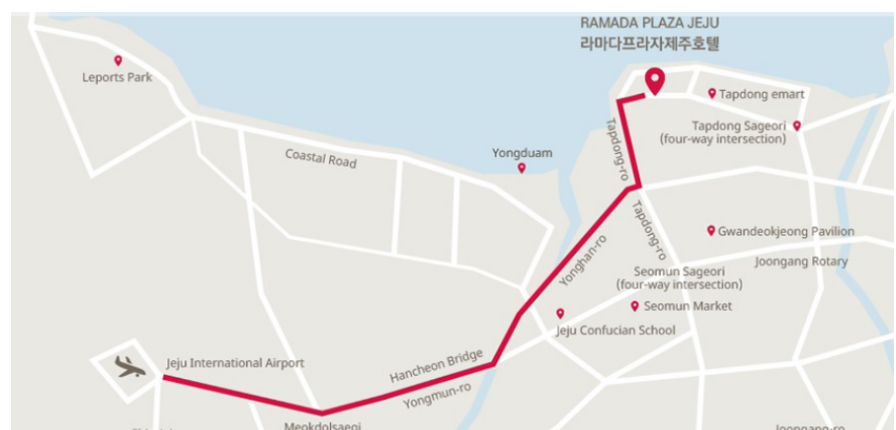
Tapdong-ro, Jeju-si, Jeju Island

- **Tel.:** +82-64-729-8100

- Total distance 3.8km

Total time 10 min by car

Approx. 5,000 won taxi ride





General Information

- Free Shuttle

- The hotel provides a free shuttle service as shown in the below table (available without reservation).
- The shuttle pick-up area is located at the C10 parking lot of Jeju Airport (Jeju Airport → Ramada Plaza Jeju).
- Shuttle Schedule

Date	Time		Destination	Shuttle
	Departure	Arrival		
Oct. 29(Tue)	14:00	14:10	Jeju Airport→Ramada Plaza	15 seater bus
	16:00	16:10		
	18:00	18:10		
Oct. 30(Wed)	08:30	08:40	Jeju Airport→Ramada Plaza	45 seater bus
	11:00	11:10		
	13:00	13:10		
	15:00	15:10		
	17:00	17:10		
Oct. 31(Thu)	08:30	08:40	Jeju Airport→Ramada Plaza	45 seater bus
	11:00	11:10		
Nov. 01(Fri)	10:50	11:00	Ramada Plaza→Jeju Airport	45 seater bus
	15:30	15:40		

5 Accommodation

- The Ramada Plaza Jeju offers rooms for ISGNSS 2019 in conjunction with IPNT Conference participants with a special rate

Room Type	Room ONLY (Sun~Thu)
Standard Twin (Mountain View)	KRW 155,000
Standard Twin (Ocean View)	KRW 175,000
Breakfast (Option)	KRW 22,000 per person

- The above rates are inclusive of the 10% service charge and 10% VAT.
- If you want to make a reservation for your staying, please send your reservation form to the followings (by email or fax)
- The reservation deadline is Oct. 10th.

- Contact

Ms. Su-Young Kim Tel: +82-2-3672-8700 Fax: +82-2-3672-0066 E-mail: ramadajeju1004@naver.com



Guideline for Speakers //

1 Oral presentation

- **Presentation material:** 20 minutes for presentation (PPT or PDF files)
(Please bring your USB thumb drive on the day of presentation and deliver it to the assistant at the conference hall during break time before your session so that it can be set up at the laptop computer)
- **Language:** International Session: Full paper written in English, presentation in English
Domestic Session: Full paper written in Korean, presentation in Korean

2 Poster presentation

■ Poster presentation schedule

- Poster should be placed before 10:00 on October 31 (Thu)
- Poster display time 10:00-17:00 on October 31 (Thu)
- Intensive presentation time 13:30-14:30 on October 31 (Thu)
- Poster should be removed: 17:00-17:30 on October 31 (Thu)

■ Poster board size: A0 size (841 x 1,189 mm)

- The presentation number will be posted at the of each panel. Please use a correct panel labeled with your paper number
- Please have at least one of the authors available in front of your poster during intensive presentation time for possible discussions and questions
- Pins will be provided to attach your poster on the board
- **Language:** International Session: A0 sized paper written in English, presentation in English
Domestic Session: A0-sized poster written in either English (preferred) or Korean, presentation in Korean
- Please have at least one of the authors available in front of your poster during intensive presentation time for possible discussions and questions.

3 Information for session chair

The chairpersons of each session should arrive at the session room 10 minutes earlier the session and check the attendance of speakers in the session



At a Glance

Day 1: Oct 29 (Tue)

	Ramada A
19:30 - 20:30	Welcome reception

Day 2: Oct 30 (Wed)

	Ramada A	Ramada B
08:00 - 09:00	Registration	
09:00 - 12:00	[K-TS] Tutorials (K)	
12:00 - 13:00	Luncheon	
13:00 - 13:20	Opening Ceremony	
13:20 - 15:40	[I-IS] Invited Session [E]	
13:40 - 16:00	Break / Networking	
16:00 - 17:40		[K-FS] Government Forum (K)
17:40 - 18:00	Break / Networking	
18:00 - 20:00	Banquet	

Day 3: Oct 31 (Thu)

	Ramada A	Ramada B	Ramada C	Ramada D
08:00 - 09:00	Registration			
09:00 - 10:20	[I-A1] Receivers & Advanced Technologies	[I-B1] GNSS Status Updates and Augmentation	[I-C1] PPP, RTK and e-GNSS-1	[K-D1] Indoor / Urban / Personal Navigation
10:40 - 12:00	[I-A2] Emergency Localization	[I-B1] PNT & Related Technologies		[K-D2] Multi-sensors & Integrated Navigation
12:00 - 13:30	Luncheon			
13:30 - 14:30	Poster session (13:30 ~ 14:30)			
14:30 - 16:10	[I-A3] Indoor / Urban / Personal Navigation	[I-B3] Aviation, Marine, Land and Space Applications	[I-C3] Geodesy / Surveying / Mapping & GNSS Remote Sensing	[K-D3] Autonomous Navigation
16:10 - 17:30	[I-A4] Autonomous Navigation		[I-C4] Timing and Scientific Applications	[K-D4] Aviation, Marine, Land and Space Applications
17:50 - 19:00	IPNT Meeting	* I : International Session * K : Domestic Session		



Day 4: Nov 1 (Fri)

	Ramada A	Ramada B	Ramada C	Ramada D
08:00 - 09:00	Registration			
09:00 - 10:20	[I-A5] Multi-sensors & Navigation Applications-1	[I-B5] Algorithm & Simulation Testing-1	[K-C5] Multi-constellation GNSS & Augmentation	[K-D5] Receivers & Antenna Technologies
10:40 - 12:00	[I-A6] Multi-sensors & Navigation Applications-2	[I-B6] Algorithm & Simulation Testing-2	[K-C6] Precise & Scientific Applications	[K-D6] Jamming and Interference
12:00 - 13:30	Lucheon / * IPC Meeting (Mara Hall)			
13:30 - 14:50			[K-C7] Special Session on "Start-Up"	[K-D7] Simulation & Testing
14:50 - 15:00	Closing Session			



Oral Presentation

Day 1: October 29 (Tue)

Ramada Ballroom A

19:30 - 20:30	Welcome reception	Chair: Hyung Keun Lee (Korea Aerospace University, Korea)
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Day 2: October 30 (Wed)

Ramada Ballroom A

08:00 - 09:00	Registration	
[K-TS] Tutorials Session (Ramada Ballroom A) Chair: Seong Yun Cho (Kyungil University, Korea)		
Time	No.	Contents
09:00 - 10:00	[K-TS-1]	GNSS Fundamental & Network-based RTK Dr. Hee Sung Kim (Korea Aerospace Research Institute, Korea)
10:00 - 11:00	[K-TS-2]	An Introduction to Visual-Inertial Navigation and Invariant Kalman Filtering Dr. Se Jong Heo (Hyundai Motor Company, Korea)
11:00 - 12:00	[K-TS-3]	AI and Its Application to Indoor Positioning Prof. Jaehyun Yoo (Hankyong National University, Korea)
12:00 - 13:00	Luncheon (1F Tammora)	
Opening Ceremony (Ramada Ballroom A) Chair: Moon Beom Heo (Korea Aerospace Research Institute, Korea)		
13:00 - 13:05	Opening Address	Changdon Kee (President of IPNT, Korea)
13:05 - 13:10	Congratulatory Address 1	Taewon Kang (Executive Vice President, Agency for Defense Development, Korea)
13:10 - 13:15	Congratulatory Address 2	Hosang Sakong (President, National Geographic Information Institute, Korea)
13:15 - 13:20	Congratulatory Address 3	Seung-Yeong Lee (President, National Maritime PNT Office, Korea)
[I-IS] Invited Session (Ramada Ballroom A) Chair: Sanguk Lee (Electronics and Telecommunications Research Institute, Korea)		
13:20 - 14:00	[I-IS-1]	▪ Key Note Speech The GNSS Frontier: Advancing Space Use of Global Navigation Satellite Systems Dr. B. W. Ashman (NASA, USA)
14:00 - 14:30	[I-IS-2]	▪ Invited Speech Downstream opportunities powered by European GNSS (Galileo/EGNOS) Mr. R. Horn (EU/DE)
14:30 - 15:00	[I-IS-3]	Update on the BeiDou Navigation Satellite System (BDS) Dr. Jun Shen (China Satellite Navigation Office, China)
15:00 - 15:30	[I-IS-4]	Australia's multi-GNSS positioning future Dr. S. McClusky (GeoScience Australia, Australia)
15:30 - 15:40	Q&A	Dr. Sanguk Lee (Electronics and Telecommunications Research Institute, Korea)
15:40 - 16:00	Break / Networking	



[K-FS] Government Forum Session (Ramada Ballroom B)

Chair : Kwan-Dong Park (Inha University, Korea)

16:00 - 16:25	[K-FS-1]	Current Status and Future Plans of NGII Satellite Control Points <i>Won-Kuk Lee (National Geographic Information Institute, Korea)</i>
16:25 - 16:50	[K-FS-2]	Current Status and Future Plans for Maritime PNT <i>Seung-Yeong Lee (National Maritime PNT Office, Korea)</i>
16:50 - 17:15	[K-FS-3]	From Industrial Platform to Industrial Artificial Intelligence <i>Gyu Taek Lee (Ministry of Trade, Industry, and Energy, Korea)</i>
17:15 - 17:40	Q&A	<i>Prof. Kwan-Dong Park (Inha University, Korea)</i>
17:40 - 18:00	Break / Networking	

Banquet (Ramada Ballroom B)

Chair: Sang Hyun Park (Korea Research Institute of Ships & Ocean Engineering, Korea)

18:00 - 20:00	<ul style="list-style-type: none"> ▪ Introduction of companies: NAVCOURS Co., Ltd., Difine Co., Inc., INSUNG International Co., Ltd., Wisesystem Co., Ltd., GTS Solutions, Inc., GNSS Solution Co., Ltd., Etobb Co., Ltd., GEOSYSTEMS, Inc., PP-Solution, Inc., SMART SYSTEM, Replex Co., Ltd., ATMInc, Jeju Convention & Visitors Bureau ▪ Awards <ul style="list-style-type: none"> - Award of achievement 1: <i>Prof. Chansik Park (Chungbuk National University, Korea)</i> - Award of achievement 2: <i>Dr. Dong-Ho Shin (Agency for Defense Development, Korea)</i> - An academic award: <i>Dr. Hyungmin So (Agency for Defense Development, Korea)</i> ▪ Banquet ▪ Show 	
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Day 3: October 31 (Thu)

Ramada Ballroom A

[I-A1] Receivers & Advanced Technologies

Co-chairs: Sunwoo Kim (Hanyang University, Korea)

Dah-Jing Jwo (National Taiwan Ocean University, Taiwan)

Time	No.	Contents
09:00 - 09:20	[I-A1-1]	Implementation of GPS/BDS/GLONASS/Galileo Signal Reception Algorithm for Real-time SDR <i>Jong-Il Park, Kwi Woo Park, Chansik Park* (Chungbuk National University, Korea)</i>
09:20 - 09:40	[I-A1-2]	A New Massive Multi-correlator Metric Tested Against GNSS Signal Generator Attacks with a Slow Power Increase and Spoofer Movement <i>Ronny Blum, Dominik Dotterbock (Universität der Bundeswehr, München, Germany), Kahee Han (Inha University, Korea), Thomas Pany (Universität der Bundeswehr, München, Germany)</i>
09:40 - 10:00	[I-A1-3]	Multipath Mitigation for GPS Navigation Filters Based on the Maximum Correntropy Criterion <i>Dah-Jing Jwo*, Jen-Hsien Lai, Yi Chang (National Taiwan Ocean University, Taiwan)</i>

10:00 - 10:20	[I-A1-4]	Statistical Analysis Of Ionospheric Scintillation S4 Index Time-Series During Development Of An Ionospheric Storm <i>Darko Špoljar, Nelida Črnjarić-Žic (University of Rijeka, Croatia), Nenad Sikirica* (Krapina University of Applied Sciences, Krapina, Croatia), Kristijan Lenac (University of Rijeka, Croatia)</i>
10:20 - 10:40	Break / Networking	
[I-A2] Emergency Localization Co-chairs: <i>Sunwoo Kim (Hanyang University, Korea)</i> <i>Yun Ho (RideFlux, Korea)</i>		
10:40 - 11:00	[I-A2-1]	LTE signal based vehicle positioning system in tunnel environment <i>Beomju Shin, Jung Ho Lee, Donghyun Shin (Korea Institute of Science and Technology, Korea), Chongwon Kim, Sanghoon Jeon (Kakao Mobility Corp., Korea), Changdon Kee (Seoul National University, Korea), Taikjin Lee* (Korea Institute of Science and Technology, Korea)</i>
11:00 - 11:20	[I-A2-2]	Feasibility Analysis on LTE RSRP Fingerprint DB Estimation using Sparse War-Driver Collecting Data for Emergency Location <i>Young-Su Cho*, Myung-In Ji (ETRI, Korea)</i>
11:20 - 11:40	[I-A2-3]	Surface Correlation-Based Pedestrian Localization Technology using LTE signals in Urban Areas <i>Jung Ho Lee, Beomju Shin, Donghyun Shin (Korea Institute of Science and Technology, Korea), Jinwoo Park (Korea University, Korea), Seo Ho Lee, Hun Nam (Lee Technology Korea Co., Ltd., Korea), Taikjin Lee* (Korea Institute of Science and Technology, Korea)</i>
11:40 - 12:00	[I-A2-4]	Enhanced Functional Requirements and Positioning Platform Development Work Progress in Emergency Location Services <i>Dongwook Choi* Yeji Kim, Sooyeon Lee, Jaeho Choi (Korea Telcom, Korea)</i>
12:00 - 13:30	Luncheon (1F Tammora)	
13:30 - 14:30	Poster session (Ramada Ballroom Lobby) Co-chairs: <i>[IPS] Jong-Hoon Won (Inha University, Korea)</i> <i>[KPS] Euiho Kim (Hongik University, Korea)</i>	
[I-A3] Indoor/Urban/Personal Navigation Co-chairs: <i>Hyung Keun Lee (Korea Aerospace University, Korea)</i> <i>Ershen Wang (Shenyang Aerospace University, China)</i>		
14:30 - 14:50	[I-A3-1]	Influence of the Smartphone Antenna Calibration on the Precise Positioning using Android Raw GNSS Measurements <i>Himanshu Sharma, Thomas Pany (Universität der Bundeswehr München, Germany)</i>
14:50 - 15:10	[I-A3-2]	A Pose Classification Algorithm using Procrustes Shape Matching for the Pedestrian Dead Reckoning in Smartphone <i>Daehyun Kim, Chan Gook Park* (Seoul National University, Korea)</i>
15:10 - 15:30	[I-A3-3]	Switching Algorithm in Deep Urban Area Using DGNSS/RTK Technique and Multi-GNSS Carrier Phase Variation <i>Yongjun Lee, Cheolsoo Lim, Hyojung Yoon, Yebin Lee, Jeounghyeon Yun, Byungwoon Park* (Sejong University, Korea), Yoola Hwang, Byoung-Sun Lee, Jaeyoung Ahn (Electronics and Telecommunications Research Institute, Korea)</i>
15:30 - 15:50	[I-A3-4]	Precise Vehicle Localization Using Gaussian Mixture Distributions Map based on Road Marking <i>Kyu-Won Kim, Gyu-In Jee* (Konkuk University, Korea)</i>



15:50 - 16:10	Break / Networking	
[I-A4] Autonomous Navigation Co-chairs: <i>Ronny Blum (UFAF, Germany)</i> <i>Sang-Hoon Jeon (KaKao Mobility, Korea)</i>		
16:10 - 16:30	[I-A4-1]	Local Path Planner using LiDAR and High Definition Map <i>Namhyung Lee, Seung-Hwan Chung, Seung-Hyun Kong*</i> (Korea Advanced Institute of Science and Technology, Korea)
16:30 - 16:50	[I-A4-2]	Robust Wheeled Mobile Robot Navigation Through Smartphone IMU Based Cycle Slip Detection and Compensation <i>Daniel Hong, O-Jong Kim, Jungbeom Kim, Donguk Kim, Changdon Kee*</i> (Seoul National University, Korea)
16:50 - 17:10	[I-A4-3]	Creating a Reinforcement Learning Environment with an Ultra-Low-Cost Handmade Self-Driving Simulator and its Application to Deep-Learning <i>Ji-Ung Im, Jong-Hoon Won* (Inha University, Korea)</i>
17:10 - 17:30	[I-A4-4]	Development and Verification of a Control Logic for an Autonomous Ground Vehicle based on GNSS-RTK <i>Sang-Hun Ahn, Hyeon-Been Park, Gun-Hoon Ji, Jong-Hoon Won*</i> (Inha University, Korea)
17:30 - 17:50	Break / Networking	
17:50 - 19:00	IPNT Meeting (Ramada Ballroom A)	

Day 3: October 31 (Thu)

Ramada Ballroom B

[I-B1] GNSS Status Updates and Augmentation Co-chairs: <i>Pil-Ho Park (Korea Astronomy and Space Science Institute, Korea)</i> <i>O-Jong Kim (Seoul National University, Korea)</i>		
Time	No.	Contents
09:00 - 09:20	[I-B1-1]	Performance Analysis on L1 SFMC SBAS in South Korea <i>Cheol-Soon Lim, Byung-Woon Park* (Sejong University, Korea),</i> <i>Youngsun Yun (Korea Aerospace Research Institute, Korea)</i>
09:20 - 09:40	[I-B1-2]	Improved Ionospheric Monitoring for Future Dual-Frequency GBAS <i>Michael Felux*, Maria Caamano, Mihaela-Simona Ciciu,</i> <i>Daniel Gerbeth (German Aerospace Center (DLR), Germany)</i>
09:40 - 10:00	[I-B1-3]	GNSS Satellite Induced Range Biases in the Context of Differential MF/MC Applications <i>Steffen Thöelert, Mihaela-Simona Ciciu, Michael Meurer</i> (German Aerospace Center (DLR), RWTH Aachen University, Germany)
10:00 - 10:20	[I-B1-4]	BDS Signal-in-space Range Error Assessment and Bias Correction <i>Yize Zhang*, Nobuaki Kubo</i> (Tokyo University of Marine Science and Technology, Japan)
10:20 - 10:40	Break / Networking	

[I-B2] PNT & Related Technologies Co-chairs: <i>Jiwon Seo (Yonsei University, Korea)</i> <i>Chia-Chyang Chang (Chien Hsin University, Taiwan)</i>		
10:40 - 11:00	[I-B2-1]	Development of a Numerical Simulator for KPS Signal Design <i>Heon Shin, Kahee Han, Jong-Hoon Won*(Inha University, Korea)</i>
11:00 - 11:20	[I-B2-2]	A Method of GNSS RF Compatibility Assessment for KPS Signal Design <i>Kahee Han, Heon Shin, Jong-Hoon Won*(Inha University, Korea)</i>
11:20 - 11:40	[I-B2-3]	Multichain-based Loran Performance with Spatial and Directional ASF Correction in Yellow Sea <i>Pyo-Wong Son*, Taehyun Fang, Kiyeol Seo (Korea Research Institute of Ships & Ocean Engineering, Korea)</i>
12:00 - 13:30	Luncheon (1F Tammora)	
13:30 - 14:30	Poster session (Ramada Ballroom Lobby) Co-chairs: <i>[IPS] Jong-Hoon Won (Inha University, Korea)</i> <i>[KPS] Euiho Kim (Hongik University, Korea)</i>	
[I-B3] Aviation, Marine, Land and Space Applications Co-chairs: <i>Youngbaek Kim (NAVCOURS Co., Ltd., Korea)</i> <i>Tae Hyun Fang (Korea Research Institute of Ships and Ocean Engineering, Korea)</i>		
14:30 - 14:50	[I-B3-1]	Some Issues to Consider to Utilize SBAS in the Marine Sector <i>Sang Hyun Park*, Young Hoon Han (Korea Research Institute of Ships & Ocean Engineering, Korea)</i>
14:50 - 15:10	[I-B3-2]	Flight Experiment Results of the GNSS Receiver System for the Test Launch Vehicle <i>Byung-Moon Kwon*, Yong-Sul Shin, Keun-Su Ma, Jeong-Hwan Ko (Korea Aerospace Research Institute, Korea)</i>
15:10 - 15:30	[I-B3-3]	An Interim Result of Performance Analysis on the Use of SSV for KPS Satellites <i>Gun-Hoon Ji, Heon Shin, Jong-Hoon Won*(Inha University, Korea)</i>
15:30 - 15:50	[I-B3-4]	Analysis of The Earth's and Moon's Shadows Phenomenon On The GPS Orbits <i>Sunkyoung Yu, Donguk Kim (Seoul National University, Korea), Junesol Song (Ecole Nationale de l'Aviation Civile, France), Changdon Kee* (Seoul National University, Korea)</i>
15:50 - 16:10	Break / Networking	
17:50 - 19:00	IPNT Meeting (Ramada Ballroom A)	

Day 3: October 31 (Thu)

Ramada Ballroom C

[I-C1] PPP, RTK and e-GNSS-1 Co-chairs: Jong Uk Park (Korea Astronomy and Space Science Institute, Korea) Chang Ho Kang (Kumoh National Institute of Technology, Korea)		
Time	No.	Contents
09:00 - 09:20	[I-C1-1]	Performance Analysis of Single-Frequency PPP-RTK in the Japanese Region by Utilizing SSR Messages Provided by Jenoba <i>Miso Kim* (PP-Solution Inc., Korea), Kwan-Dong Park (PP-Solution Inc., Korea, Inha University, Korea), Kenichi Sako, Yoshimichi Kawano (Jenoba Co., LTD, Japan)</i>



09:20 - 09:40	[I-C1-2]	Precise Point Positioning Based on Pseudo-range Measurements by using QZSS Centimeter Level Augmentation Service <i>Hae-Chang Lee*</i> (Inha University, Korea), <i>Kwan-Dong Park</i> (Inha University, Korea, PP-Solution Inc., Korea)
09:40 - 10:00	[I-C1-3]	A Real-Time High-Accuracy Tropospheric Correction Generation Method for Compact Wide-Area RTK (WARTK) <i>Donguk Kim</i> , <i>Bugyeom Kim</i> , <i>Sunkyoung Yu</i> (Seoul National University, Korea), <i>Deokhwa Han</i> (Ride Flux, Korea), <i>Junesol Song</i> (Ecole Nationale de l'Aviation Civile, France), <i>Changdon Kee*</i> (Seoul National University, Korea)
10:00 - 10:20	[I-C1-4]	Application of SSR Correction for IoT (Internet of Things) Era <i>Min-Seo Kim</i> , <i>Tae-Suk Bae*</i> (Sejong University, Korea)
10:20 - 10:40	Break / Networking	
12:00 - 13:30	Luncheon (1F Tammora)	
13:30 - 14:30	Poster session (Ramada Ballroom Lobby) Co-chairs: [IPS] <i>Jong-Hoon Won</i> (Inha University, Korea) [KPS] <i>Euiho Kim</i> (Hongik University, Korea)	
[I-C3] Geodesy/Surveying/Mapping & GNSS Remote Sensing Co-chairs: <i>Kwan-Dong Park</i> (Inha University, Korea) <i>Chia Hung Chen</i> (National Chen Kung University, Taiwan)		
14:30 - 14:50	[I-C3-1]	Using the Features of QZSS to Improve the Performance of Medium-Baseline RTK Positioning over Japan <i>Feny-Yu Chu</i> , <i>Nokuaki Kubo</i> , <i>YiZe Zhang</i> (Tokyo University of Marine Science and Technology, Japan)
14:50 - 15:10	[I-C3-2]	Triple Frequency GNSS Cycle Slip Detection Algorithm during High Ionospheric Activities <i>Ye-Bin Lee</i> , <i>Cheol-Soon Lim</i> , <i>Hyo-Jung Yoon</i> , <i>Yong-Jun Lee</i> , <i>Jeong-Hyeon Yoon</i> , <i>Byung-Woon Park*</i> (Sejong University, Korea), <i>Cho Am</i> (Korea Aerospace Research Institute, Korea)
15:10 - 15:30	[I-C3-3]	Continuous GPS-based Monitoring of Seismic Gap Area Earthquake Energy Potential Associated with the 2010 Mw 7.8 and 2012 Mw 6.2 Earthquakes in Mentawai, West Sumatra, Indonesia <i>Bondan Galih Dewanto</i> , <i>Ming Yang</i> (National Cheng Kung University, Taiwan)
15:30 - 15:50	[I-C3-4]	Emerging "GNSS as a Service" in Japan <i>Akira Akasaka</i> (EU-Japan Centre for Industrial Cooperation, Japan)
15:50 - 16:10	Break / Networking	
[I-C4] Timing and Scientific Applications Co-chairs: <i>Eugene Bang</i> (Ecole Nationale de l'Aviation Civile(ENAC), France) <i>Jinsil Lee</i> (KAIST, Korea)		
16:10 - 16:30	[I-C4-1]	Applications of Satellite Laser Ranging and Laser Time Transfer in BeiDou Navigation Satellite System <i>Haifeng Zhang*</i>, <i>Huarong Deng</i>, <i>Zhien Cheng</i>, <i>Zhongping Zhang</i> (Chinese Academy of Sciences, China)
16:30 - 16:50	[I-C4-2]	The GNSS Scintillation Measured at Single Station in High Latitude Ionosphere <i>Junseok Hong*</i> (Chungnam National University, Korea Astronomy Space Science Institute, Korea), <i>Yong Ha Kim</i> (Chungnam National University, Korea), <i>Jong-Kyun Chung</i> , <i>Jaeheung Park</i> (Korea Astronomy Space Science Institute, Korea), <i>Hyuck-Jin Kwon</i> , <i>Jeong-Han Kim</i> (Korea Polar Research Institute, Korea), <i>Jong-Min Choi</i> , <i>Young-Sil Kwak</i> (Korea Astronomy Space Science Institute, Korea)

16:50 - 17:10	[I-C4-3]	The Development of Space Weather Forecasting System by Assimilating GNSS Observations <i>Chia-Hung Chen*</i> , Charles Lin (National Cheng Kung University, Taiwan), Tomoko Matsuo (University of Colorado at Boulder, USA), Jia-Ting Lin (National Cheng Kung University, Taiwan)
17:10 - 17:30	[I-C4-4]	Toward the Multi-channel GNSS-R Receiver using Single Image Super-Resolution Method <i>Hao-Yu Wang</i> , Jyh-Ching Juang (National Cheng Kung University, Taiwan)
17:30 - 17:50	Break / Networking	
17:50 - 19:00	IPNT Meeting (Ramada Ballroom A)	

Day 3: October 31 (Thu)

Ramada Ballroom D

[K-D1] Indoor/Urban/Personal Navigation Co-chairs: Sang Hyun Park (Korea Research Institute of Ships and Ocean Engineering, Korea)		
Time	No.	Contents
09:00 - 09:20	[K-D1-1]	Robust Step Detection for the Pedestrian Dead Reckoning in Handheld Devices <i>Hyunwoong Kang</i> , So Young Park, Chan Gook Park* (Seoul National University, Korea)
09:20 - 09:40	[K-D1-2]	Base Station Location Estimation Based on LTE Signal Propagation Characteristics and Measurement Reference Information <i>Seong Yun Cho*</i> (Kyungil University, Korea), Chang Ho Kang (Kumoh National University, Korea)
09:40 - 10:00	[K-D1-3]	A Study on the Sliding Window Application Method according to Route History for ANN based Positioning Techniques in Indoor Radio Navigation Denied Area <i>Jae-Hee Seo*</i> , Sebum Chun, Moon-Beom Heo (Korea Aerospace Research Institute, Korea)
10:00 - 10:20	[K-D1-4]	Broadcast-RTK Method for Large Scale Multi-user in National Area <i>Doo-Kyung Park*</i> , Seung-Yong Lim, Hong-Gi Shin, Seung-Ho Lee (Munhwa Broadcasting Corp., Korea)
10:20 - 10:40	Break / Networking	
[K-D2] Multi-sensors & Integrated Navigation Co-chairs: Seong Yun Cho (Kyungil University, Korea)		
10:40 - 11:00	[K-D2-1]	An Approach to Consider Noise Correlation of Time-Differenced Carrier Phase Measurement for GPS/INS Integrated Navigation Algorithm <i>Jung-Beom Kim</i> (Seoul National University), Youn-Sil Kim (Korea Aerospace Research Institute), Chang-Don Kee* (Seoul National University)
11:00 - 11:20	[K-D2-2]	Improved Heading Determination using Differential GNSS-based Orientation Measurement for Antarctic Exploration <i>Dongwoo Kim</i> , Dongchan Min, Kihun Nam, Minchan Kim, Jiyun Lee* (Korea Advanced Institute of Science and Technology, Korea)



11:20 - 11:40	[K-D2-3]	Design of a Federated Kalman Filter based Multi-Radio Integrated Navigation Algorithm <i>Jae Hoon Son, Heyone Kim (Chungnam National University, Korea), Sang Heon Oh (Navcours Co., Ltd, Korea), Dong-Hwan Hwang* (Chungnam National University, Korea)</i>
11:40 - 12:00	[K-D2-4]	Experimental Tests to Assess Navigation Performance of Low-Cost GNSS Chips and IMU Sensors Embedded on Smartphones <i>Subin Lee, Gun-Hoon Ji, Jong-Hoon Won* (Inha University, Korea)</i>
12:00 - 13:30	Luncheon (1F Tammora)	
13:30 - 14:30	Poster session (Ramada Ballroom Lobby) Co-chairs: [IPS] Jong-Hoon Won (Inha University, Korea) [KPS] Euiho Kim (Hongik University, Korea)	
[K-D3] Autonomous Navigation Co-chairs: Kihoon Lee (Agency for Defense Development, Korea)		
14:30 - 14:50	[K-D3-1]	Performance Evaluation of a Single-frequency GNSS-RTK based Autonomous Driving System for Speed Sprayer <i>Joong-hee Han*, Chi-ho Park (DGIST, Korea)</i>
14:50 - 15:10	[K-D3-2]	Monocular Visual Localization and Mapping using 3D Point Cloud and Feature Map <i>Tae-Ki Jung*, Gyu-In Jee (Konkuk University, Korea)</i>
15:10 - 15:30	[K-D3-3]	Integrity Risk Optimization Method based on Landmark Dilution of Precision (DOP) in Lidar-based Navigation System <i>Pil Hun Choi, iyun Lee* (Korea Advanced Institute of Science and Technology, Korea)</i>
15:30 - 15:50	[K-D3-4]	Construction of a Server Environment for Concurrent Performance Evaluation of Multiple Autonomous Driving Clients <i>Young-Hoon Do, Ji-Ung Im, Jong-Hoon Won* (Inha University, Korea)</i>
15:50 - 16:10	Break / Networking	
[K-D4] Aviation, Marine, Land and Space Applications Co-chairs: Byung-Kyu Choi (Korea Astronomy and Space Science Institute, Korea)		
16:10 - 16:30	[K-D4-1]	Performance Comparison of L1 and L5 GNSS Measurements using Android Smartphone <i>Jeong-Hyeon Yun, Byung-Woon Park*, Cheol-Soon Lim, Hyo-Jung Yoon, Yong-Jun Lee, Ye-Bin Lee (Sejong University, Korea)</i>
16:30 - 16:50	[K-D4-2]	Feasibility Study on SSR Augmentation to Land Vehicles <i>Cheol-Soon Lim, Min-Seo Kim, Tae-Suk Bae, Byung-Woon Park* (Sejong University, Korea)</i>
16:50 - 17:10	[K-D4-3]	Attitude Determination of Cube-Satellite using Multiple GPS Antennas <i>Yonghwan Bae, Hanjoon Shim, Sunkyoung Yu, Dong-Uk Kim, O-Jong Kim, Changdon Kee* (Seoul National University, Korea)</i>
17:10 - 17:30	[K-D4-4]	Relative Navigation for Autonomous Rendezvous and Docking of Nano-Satellite Based on DGPS <i>Hanjoon Shim, Sunkyoung Yu, O-Jong Kim, Changdon Kee* (Seoul National University, Korea), Dong-Hyun Cho, Hae-Dong Kim (Korea Aerospace Research Institute, Korea)</i>
17:30 - 17:50	Break / Networking	
17:50 - 19:00	IPNT Meeting (Ramada Ballroom A)	

Day 4: November 1 (Fri)

Ramada Ballroom A

[I-A5] Multi-sensors & Navigation Applications - 1 Co-chairs: <i>Kiwon Song (Agency for Defense Development, Korea)</i> <i>Ghang-Ho Kim (Hyundai Robotics, Korea)</i>		
Time	No.	Contents
09:00 - 09:20	[I-A5-1]	Ad-hoc Navigation System by Relaying GNSS Signal <i>Sanguk Lee (Electronics and Telecommunications Research Institute, Korea)</i>
09:20 - 09:40	[I-A5-2]	Performance Analysis of GNSS/Odometer/Barometer Integration with Position and Velocity Constraint in a GNSS-degraded Environment <i>Yu-Hua Li*</i> , <i>Kai-Wei Chiang (National Cheng-Kung University, Taiwan)</i> , <i>Li-Ta Hsu (The Hong Kong Polytechnic University, Hong Kong)</i>
09:40 - 10:00	[I-A5-3]	3D Feature Map-Based Hybrid Navigation Utilizing Monocular Vision/GNSS/INS <i>Yu Dam Lee, Won Jae Yoo, Lawoo Kim, Bu Sung Choi, Hyung Keun Lee*</i> (Korea Aerospace University, Korea)
10:00 - 10:20	[I-A5-4]	Integrated Navigation System Based on Low-Cost Sensors against GPS-Denied Environments <i>Bu Sung Choi, Won Jae Yoo, Lawoo Kim, Yu Dam Lee, Hyung Keun Lee*</i> (Korea Aerospace University, Korea)
10:20 - 10:40	Break / Networking	
[I-A6] Multi-sensors & Navigation Applications - 2 Co-chairs: <i>Euiho Kim (Hongik University, Korea)</i> <i>Taikjin Lee (Korea Institute of Science and Technology, Korea)</i>		
10:40 - 11:00	[I-A6-1]	The Performance Analysis of INS/GNSS/ORB-SLAM Integration Using Smartphone's Sensors for Land Vehicle Navigation Applications in GNSS-Challenging Environments <i>Dinh Thuan Le*</i> , <i>Kai-Wei Chiang, Guang-Je Tsai (National Cheng Kung University, Taiwan)</i> , <i>Thanh Trung Duong (Hanoi University, Vietnam)</i>
11:00 - 11:20	[I-A6-2]	GPS/VIO Based on Nonlinear Optimization Method <i>Yeong-Dong Choi, Seong-Hun Seo, Tae-Ki Jung, Gyu-In Jee*</i> (Konkuk University, Korea)
11:20 - 11:40	[I-A6-3]	The Assessment of Automatic Lane Boundary Extraction based on Point Clouds Intensity for HD Maps Generation <i>Jhih-Cing Zeng*</i> , <i>Guang-Je Tsai, Kai-Wei Chiang (National Cheng Kung University, Taiwan)</i>
12:00 - 13:30	Luncheon (1F Tammora) / IPC Meeting (2F Mara Hall)	
13:30 - 14:30	Closing Session (Ramada Ballroom A) - Domestic paper award - Announcement on ISGNSS-2020	

Day 4: November 1 (Fri)

Ramada Ballroom B

[I-B5] Algorithm & Simulation Testing-1 Co-chairs: <i>Cheonsig Sin (Electronics and Telecommunications Research Institute, Korea)</i> <i>Youngsun YUN (Korea Aerospace Research Institute, Korea)</i>		
Time	No.	Contents
09:00 - 09:20	[I-B5-1]	Improved Satellite Selection Algorithm for a GNSS Navigation Receiver <i>Ershen Wang (Shenyang Aerospace University, China, Beihang University, China)*, Di Yang, Tao Pang, Pingping Qu, He He, Song Xu, Caimiao Sun (Shenyang Aerospace University, China)</i>

09:20 - 09:40	[I-B5-2]	Reduced ARAIM Subsets Method Based on a Fast Satellite Selection Algorithm <u>Wenbo Wang</u> (China Academy of Sciences Institute of Optoelectronics, China, University of Chinese Academy of Sciences, China), Ying Xu* (China Academy of Sciences Institute of Optoelectronics, China)
09:40 - 10:00	[I-B5-3]	Frequency Tracking Error Analysis of LQG based Vector Tracking Loop compared to Conventional EKF based Vector Tracking Loop <u>Min-Huck Park</u> (Seoul National University, Korea), Sang-Hoon Jeon, Chong-Won Kim (KaKao Mobility, Korea), Chang-Don Kee* (Seoul National University, Korea)
10:20 - 10:40	Break / Networking	
[I-B6] Algorithm & Simulation Testing-2 Co-chairs: Sanguk Lee (Electronics and Telecommunications Research Institute, Korea) So Yun Lee (Electronics and Telecommunications Research Institute, Korea)		
10:40 - 11:00	[I-B6-1]	Assessment Using a Low Power Offset BPSK Component for Spreading Code Authentication Daniel S. Maier*, Thomas Pany (Universität der Bundeswehr München, Germany)
11:00 - 11:20	[I-B6-2]	Method Proposal and Performance Analysis of GPS Collaborative Navigation for Operation of Hybrid Type Unmanned Vehicles <u>Hyo-Jeong Seok</u> * (Korea Aerospace Research Institute, Korea), Cheol-soon Lim (Sejong University, Korea)
11:20 - 11:40	[I-B6-3]	GNSS NLOS Discrimination and Multipath Error Compensation using Deep Learning <u>Seung-Hwan Chung</u> , Sangjae Cho, Taeseon Kim, Namhyung Lee, Seung-Hyun Kong* (Korea Advanced Institute of Science and Technology, Korea)
12:00 - 13:30	Luncheon (1F Tammora) / IPC Meeting (2F Mara Hall)	
14:50 - 15:00	Closing Session (Ramada Ballroom A) - Domestic paper award - Announcement on ISGNSS-2020	

Day 4: November 1 (Fri)

Ramada Ballroom C

[K-C5] Multi-constellation GNSS & Augmentation Co-chairs: Sung-hyuck Im (Korea Aerospace Research Institute, Korea)		
Time	No.	Contents
09:00 - 09:20	[K-C5-1]	Evaluation of SBAS Positioning Performance According to the Service Region WAAS, MSAS, EGNOS, SDCM and GAGAN <i>Yeong-Guk Kim</i> (Inha University, Korea), <i>Kwan-Dong Park*</i> (Inha University, Korea, PP-Solution Inc., Korea)
09:20 - 09:40	[K-C5-2]	Implementation of Real-Time Point positioning based on Pseudo-range Measurements with the Application of the IGS Real-Time Service <i>Hong-Woo Seok*</i> (Inha University, Korea), <i>Kwan-Dong Park</i> (Inha University, Korea, PP-Solution Inc., Korea)
09:40 - 10:00	[K-C5-3]	A Study on Availability Design for KASS Uplink Station RFS Section <i>Cheon Sig SIN*</i> , <i>Soon Young EOM</i> (Electronics and Telecommunications Research Institute, Korea)
10:00 - 10:20	[K-C5-4]	Evaluation of Correction Information Accuracy and Timing in GNSS Wide Area Augmentation System <i>Kihoon Lee*</i> , <i>Hyungmin So</i> , <i>Junpyo Park</i> (Agency for Defense Development, Korea)
10:20 - 10:40	Break / Networking	

[K-C6] Precise & Scientific Applications Co-chairs: <i>Dong-Hwan Hwang (Chungnam National University, Korea)</i>		
10:40 - 11:00	[K-C6-1]	Compact Wide-Area RTK (WARTK): A New Centimeter-Level Satellite-Based Augmentation System Using Carrier-Phase Observations <i>Donguk Kim, Changdon Kee* (Seoul National University, Korea)</i>
11:00 - 11:20	[K-C6-2]	Simulation-based Analysis for Ionospheric Disturbances due to Earthquake using Radio Occultation Modeled by Chapman Electron Density <i>Bugyeom Kim, O-jong Kim, Deokhwa Han, Seonho Kang (Seoul National University, Korea), Junesol Song (Ecole Nationale de l'Aviation Civile, France), Changdon Kee* (Seoul National University, Korea)</i>
11:20 - 11:40	[K-C6-3]	Neural Networks Based Parametric Modeling for Path Loss Model <i>Chang Ho Kang (Kumoh National Institute of Technology, Korea), Sun Young Kim (Sejong University, Korea), Seong Yun Cho* (Kyungil University, Korea)</i>
12:00 - 13:30	Luncheon (1F Tammora) / IPC Meeting (2F Mara Hall)	
[K-C7] Special Session on “Start-Up” Co-chairs: <i>Wan Sik Choi (Korea Startup Research Institute, Korea)</i>		
13:30 - 14:30	[K-C7-1]	Entrepreneurship in the 4th Industrial Revolution <i>Lee Hyung Lee (Electronics and Telecommunications Research Institute, Korea)</i>
14:30 - 14:50	Break / Networking	
14:50 - 15:00	Closing Session (Ramada Ballroom A) - Domestic paper award - Announcement on ISGNSS-2020	

Day 4: November 1 (Fri)

Ramada Ballroom D

[K-D5] Receivers & Antenna Technologies Co-chairs: Hyoungmin So (Agency for Defense Development, Korea)		
Time	No.	Contents
09:00 - 09:20	[K-D5-1]	Design and Performance Analysis of IF Replica Signal Reconstruction Module <i>Sun Yong Lee, Jin Seok Kim, Jong Chul Cho, Hung Seok Seo (Navcours Co., Ltd, Korea), Sang Jeong Lee* (Chungnam National University, Korea)</i>
09:20 - 09:40	[K-D5-2]	Prior Covariance Estimation for the Particle Flow Filter <i>Sun Young Kim (Sejong University, Korea), Chang Ho Kang (Kumoh National Institute of Technology, Korea), Chan Gook Park (Seoul National University, Korea), Jin Woo Song* (Sejong University, Korea)</i>
09:40 - 10:00	[K-D5-3]	Assessment of Position Degradation due to RTK MSM correction Scheduling Under Various Conditions <i>Hyo Jung Yoon, Byung woon Park*, Cheol soon Lim (Sejong University, Korea)</i>
10:00 - 10:20	[K-D5-4]	Positioning Accuracy Analysis by Range Measurements Between Navigation Satellites <i>JinHyeok Jang, Sangkyung Sung, Young Jae Lee* (Konkuk University, Korea)</i>
10:20 - 10:40	Break / Networking	

[K-D6] Jamming and Interference

Co-chairs: *Chair: Seok Bo Son (NAVCOURS Co., Ltd., Korea)*

10:40 - 11:00	[K-D6-1]	Direction of Arrival Estimation for GNSS Spoofing Detection using Two-Antenna <i>JunHo Ong (University of Science and Technology, Korea), Hyoungmin So* (Agency for Defense Development, Korea)</i>
11:00 - 11:20	[K-D6-2]	Simulink Model Implementation of MVDR Adaptive Beamformer for GPS Anti-Jamming <i>Jeongwoo Han*, Hoon Park, Bokki Kim (Danam Systems Inc., Korea)</i>
11:20 - 11:40	[K-D6-3]	Phase Error of Small Array Antennas and its Effect Analysis on Beamforming Performance <i>Jong Chul Cho*, Heung Su Kim, Sung Wook Moon (Navcours Co., Ltd, Korea)</i>
11:40 - 12:00	[K-D6-4]	Analysis on the Impact of Unintentional GNSS Jamming on National Infra-Facilities <i>Gwongyu Jin, Jong-Hoon Won* (Inha University, Korea)</i>
12:00 - 13:30	Luncheon (1F Tammora) / IPC Meeting (2F Mara Hall)	

[K-D7] Simulation & Testing

Co-chairs: *Deok-Hwa Han (RideFlux, Korea)*

13:30 - 13:50	[K-D7-1]	3-dimensional Array GNSS Antenna Modeling and Simulation for Rotating Vehicle <i>Heung Su Kim*, Jong Chul Cho, Sung Wook Moon (Navcours Co., Ltd., Korea)</i>
13:50 - 14:10	[K-D7-2]	X-Plane Simulation-based Flight Technical Error (FTE) Modeling for Urban Air Mobility (UAM) Operation <i>Minchan Kim, Dongchan Min, Jiyun Lee* (Korea Advanced Institute of Science and Technology, Korea)</i>
14:10 - 14:30	[K-D7-3]	Probabilistic Analysis on Casualty Under Ground Collision for Operation of Rotary Wing Unmanned Air Vehicle (UAV) <i>Gi-Hun Nam, Dongchan Min, Jiyun Lee* (Korea Advanced Institute of Science and Technology, Korea)</i>
14:30 - 14:50	[K-D7-4]	Kasami Code-based Spread Spectrum Code Design for GNSS <i>Gwang Hee Jo, Jae Hee Noh, Jin Hyuk Lee (Chungnam National University, Korea), Deok Won Lim (Korea Aerospace Research Institute, Korea), Jae Min Ahn, Sang Jeong Lee* (Chungnam National University, Korea)</i>
14:50 - 15:00	Closing Session (Ramada Ballroom A) - Domestic paper award - Announcement on ISGNSS-2020	



Poster Presentation

Day 3: October 31 (Thu)

Ramada Ballroom Lobby

- Poster should be placed before 10:00 on October 31 (Thu)
- Poster display time 10:00-17:00 on October 31 (Thu)
- Intensive presentation time 13:30-14:30 on October 31 (Thu)

[IPS] International Poster Session

Co-chairs: *Jong-Hoon Won (Inha University, Korea)*

[P-I-01]	Spatial-Smoothing-Based DOA Estimation of Coherent Jamming Signals for a Misaligned Antenna Array <i>Kwansik Park, Jiwon Seo* (Yonsei University, Korea)</i>
[P-I-02]	Minimum Entropy Extended Kalman Filter for GPS Multipath Parameter Estimation in the Code Tracking Loop <i>Dah-Jing Jwo*, Jen-Hsien Lai, Wei-Yeh Chang (National Taiwan Ocean University, Taiwan)</i>
[P-I-03]	Demonstration Of Local Path Planning Algorithm Supporting Autonomous Navigation Of UAV In A Positioning Network <i>Yujin Shin, Jae-Young Song, Euiho Kim* (Hongik University, Korea)</i>
[P-I-04]	Effect of Delays in Simulated GPS Signals on the Reacquisition Time of a GPS Receiver <i>Woohyun Kim, Jiwon Seo* (Yonsei University, Korea)</i>
[P-I-05]	Performance Analysis of Auto-encoder Based Clustering Method <i>Sun Young Kim (Sejong University, Korea), Chang Ho Kang (Kumoh National Institute of Technology, Korea), Jin Woo Song* (Sejong University, Korea)</i>
[P-I-06]	Analysis of DOP and Visibility of KPS EIGSO Satellite according to Orbit Parameters <i>Miri Shin*, Deok Won Lim, Sebum Chun, Moon Beom Heo (Korea Aerospace Research Institute, Korea)</i>
[P-I-07]	Coarse Alignment of Gyro Reduced INS <i>Heyone Kim, Jae Hoon Son (Chungnam National University, Korea), Sang Heon Oh (Navcours Co., Ltd, Korea), Dong-Hwan Hwang* (Chungnam National University, Korea)</i>
[P-I-08]	Experimental Test of Heterogeneous Robot Swarming in a UWB Positioning System <i>Jae-Young Song, Myeong-Hak Lee, Euiho Kim* (Hongik University, Korea)</i>
[P-I-09]	Accurate Zero Velocity Detection Algorithm for Integration Approach-Based PDR <i>Seong Yun Cho* (Kyungil University, Korea), Jae Hong Lee, Chan Gook Park (Seoul National University, Korea)</i>
[P-I-10]	A Study on Discovery and Fine Positioning Technology for High Precision Guidance of Automatic Charging System (Socket Contact Type) for Electric Bus <i>Kyoung Soo Choi, Young Wook Son, Sung Jin Kim* (Korea Automotive Technology Institute, Korea)</i>
[P-I-11]	Design of The Formation Flight Control System of Multiple UAVs <i>Ji Hun Jeon (Seoul National University, Korea, Electronics and Telecommunications Research Institute, Korea), Jongkwon Son, Myung-Eun Kim, Sangyeoun Lee, Kang Bok Lee (Electronics and Telecommunications Research Institute, Korea), Chan Gook Park* (Seoul National University, Korea)</i>
[P-I-12]	Determination of Collision Avoidance Spatial Information Using GNSS <i>Chia-Chyang Chang (Chien-Hsin University, Taiwan)</i>
[P-I-13]	Study on Precise Orbit Determination Techniques for IGSO and GEO Satellites <i>Deok Won Lim*, Sebum Chun, Moon Beom Heo (Korea Aerospace Research Institute, Korea)</i>
[P-I-14]	Velocity estimation of GPS/Acoustic stations in eastern Taiwan <i>Hong-Yue CHEN* (Academia Sinica, Taiwan), Ryoya Ikuta (Shizuoka University, Japan), Yi-Lin Jiang (Academia Sinica, Taiwan)</i>
[P-I-15]	Postseismic Deformation of Korean Peninsula after the 2011 Tohoku-Oki Earthquake <i>Dong-Hyo Sohn* (Korea Astronomy and Space Science Institute, Korea), Sun-Cheon Park (Korea Meteorological Administration, Korea), Byung-Kyu Choi, Pil-Ho Park (Korea Astronomy and Space Science Institute, Korea)</i>
[P-I-16]	A Test of a TOA Compensation Method using Doppler Measurement to Improve Accuracy of Loran Positioning <i>Youngki Kim*, Tae Hyun Fang, Kiyool Seo, Sang Hyun Park (Korea Research Institute of Ships and Ocean Engineering, Korea)</i>

[KPS] Domestic Poster Session

Co-chairs: *Euiho Kim (Hongik University, Korea)*

[P-K-01]	The Clock Drift Correction Method of GNSS Receivers using the External 1PPS <i>Min Yong Choi*</i> , Hung Seok Seo (Navcours Co., Ltd., Korea)
[P-K-02]	A Study on an SDR-based Continuous Operating Reference Station for Future GNSS Networks <i>Won Jae Yoo</i> , Lawoo Kim, Yu Dam Lee, Bu Sung Choi, Hyung Keun Lee* (Korea Aerospace University, Korea)
[P-K-03]	A Study on the Operation Plan of GNSS Anti-Jamming Receiver <i>Jaekil Kim*</i> , Woosung Chung (DANAM systems Inc., Korea)
[P-K-04]	A Study on Broadband GNSS Antenna with Excellent Axial Ratio Performance Over Wide Observation Angle <i>Soon Young Eom*</i> , Jong Moon Lee, Cheon Sig Sin (Electronics and Telecommunications Research Institute, Korea)
[P-K-05]	Design of the L-band Receiver using Cavity-backed Spiral Antenna for GNSS Band <i>Dae-Wook Cheon*</i> , Jin-Ho Moon, Chang-Joo Lee, Woo-Seok Kwak (ONPOOM Co., LTD, Korea), Ki-Won Song (Agency for Defense Development, Korea)
[P-K-06]	A Study on the Calibration Method and Test Result of Interference DOA Estimation in the Anechoic Chamber for the DOA Estimation System Using MUSIC <i>Seungwoo Seo*</i> , Youngbum Park, Kiwon Song (Agency for Defense Development, Korea)
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