

# KICS Winter Conference 2021 Program

**Date** Feb. 3 (Wed) ~ 5 (Fri), 2021

**Venue** Yong Pyong Resort, Pyeongchang,  
Gangwon Province, Korea

**Organized by**   
The Korean Institute of  
Communications and  
Information Sciences

**Patrons**

 **SAMSUNG**

 **SK telecom**

 **LG전자**

 **LG U+**

 **kt**

 **GWO**  
강원도관광재단  
Gangwon Tourism Foundation



한 명을 위해 존재합니다

이제 빨리 가는 방법보다  
안전하게 가는 방법을 고민하는 당신

비어있는 관객석 앞에서도  
들려주고 싶은 노래가 있는 당신

면접장으로 향할 수는 없어도  
소중한 기회를 다음으로 미룰 수 없는 당신

여럿이 함께 있는 곳일수록  
서로를 더 배려 하게 된 당신

달라진 시대,  
한 명 한 명의 당신이 원하는  
SK텔레콤은 다 다르기에

5천만 명의 매일을 위한  
5천만 개의 SK텔레콤으로

한 명, 한 명의 초시대를 만듭니다  
**당신의 초시대를 만듭니다**



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**Patrons**





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## Message from the Chairs

Dear attendees of KICS Winter Conference 2021

We wish you all blessings in your homes and workplaces and we also hope that you stay healthy in such an unprecedented pandemic situation.

We are pleased to inform you that KICS Academic Conference will be held 02/03/2021-02/05/2021 at Yongpyong Resort, Gangwon-do. As we celebrate its 12th anniversary, this year's event continues to be one of the largest academic conferences in Korea. For 12 years, we have successfully delivered the best opportunity to exchange cutting-edge ideas on research on ICT convergence and expansion of the communication research community. We have accomplished such a great journey together with the participation and support from our society members.

This winter general academic conference will be both offline/online. We will do our best to host a safe and enjoyable conference by thoroughly complying with the Korean government's Covid-19 guidelines.

This year, we are pleased to have a special keynote on "Artificial Intelligence Technology Trend and Future Development" presented by ETRI director Yoon-Geun Lee. In addition, the conference offers interesting and very diverse programs including IITP special sessions, research group/society/branch/ITRC/BK21+ project group special sessions, Samsung Electronics/5G forum/6G forum/KISTI special sessions, and undergraduate research contests. Special tutorials on Data Science and Engineering on Prototyping will be provided. We sincerely hope the conference will be a place to exchange new ideas and research results for all of participating members including Industries, Academia, Institutes, and the Korean Government. For researchers abroad, tutorials and technical programs will be presented in English.

At this winter conference, more than 600 papers will be presented in the fields of information technology, communications, and their convergence. We ask for your active participation to help with the development of ICT in Korea.

We hope this Winter Conference will be an invaluable time for all of participants. Finally, we especially thank the Korean Academic Committee, Gangwon Branch Officers, and Steering Committee members for their help in organizing this event.

We ask for your continuing support to KICS Summer Conference in June 2021 and the KICS Fall Conference in November 2021.

February 2021



**Young-Han Kim**  
KICS President



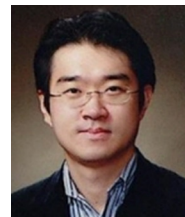
**Jun Heo**  
Organizing  
Committee Chair



**Oh-Soon Shin**  
Technical Program  
Committee Chair



**Chan-Byoung Chae**  
Technical Program  
Committee Chair



**Sang-Hyo Kim**  
Technical Program  
Committee Chair

# Committees

## General Chair Young-Han Kim (Soongsil University)

### Technical Program Committee

#### Chairs

Oh-Soon Shin (Soongsil University)

Sang-Hyo Kim (Sungkyunkwan University)

#### Vice-Chairs

Jong-Ho Lee (Soongsil University)

Bang Chul Jung (Chungnam National University)

Eun-Chan Park (Dongguk University)

Seong-Jun Lee (ETRI)

#### Members

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Song Noh (Incheon National University)

Hyun Jong Yang (POSTECH)

Jeong Hun Park (Kyungpook National University)

Jung Hyun Kim (Soonchunhyang University)

Byung Joo Lee (Kumoh National Institute of Technology)

Chan-Byoung Chae (Yonsei University)

Illsoo Sohn (SEOULTECH)

Won-Yong Shin (Yonsei University)

Kae Won Choi (Sungkyunkwan University)

Ohyun Jo (Chungbuk National University)

Chang Sik Choi (Hongik University)

Jemin Lee (DGIST)

Taesoo Kwon (SEOULTECH)

Seong Ho Chae (Korea Polytechnic University)

Seokchan Kim (Pusan National University)

### Special Program Committee

#### Members

Gye Yeong Kim (Soongsil University)

Yeong Min Jang (Korea University)

Myungsik Yoo (Soongsil University)

Haewoon Nam (Hanyang University)

Won Seok Choi (Kyungpook National University)

Sunwoo Kim (Hanyang University)

Dong Seog Han (Kyungpook National University)

Jeong Yeon Man (Gangneung-Wonju National University)

Hak Lim Ko (Hoseo University)

Dong-Seong Kim (Kumoh National Institute of Technology)

EenKee Hong (Kyunghee University)

Sungtek Kahng (Incheon National University)

Il Woo Lee (ETRI)

Sangheon Pack (Korea University)

Sunwoong Choi (Kookmin University)

Won Hyuk Lee (KISTI)

### Organizing Committee

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Changhee Joo (Korea University)

Kyung-Joon Park (DGIST)

Ji-Woong Choi (DGIST)

Haewoon Nam (Hanyang University)

Sunwoong Choi (Kookmin University)

Sang Chul Kim (Kookmin University)

Jae Seung Song (Sejong University)

Dong-Seong Kim (Kumoh National Institute of Technology)

# Registration

## ■ Registration Fee

			Early Birds	On-Site	Note
Conference Registration	Member	Student	160 USD 160,000 KRW	210 USD 210,000 KRW	Reception coupon is not included
		Regular/Life	240 USD 240,000 KRW	280 USD 280,000 KRW	
	Non-member	Student	190 USD 190,000 KRW	240 USD 240,000 KRW	Reception coupon is not included
		Regular	300 USD 300,000 KRW	340 USD 340,000 KRW	
Undergraduate Student			60 USD 60,000 KRW	80 USD 80,000 KRW	
Tutorial Registration			Same as conference registration		

\* USD 1.00 = ₩1,000 (Round down less than one hundred won)

## ■ Registration Policy

1. To be published in the KICS Winter Conference 2021 Proceedings, a minimum of one author from each accepted paper MUST register and be a KICS member, and the paper must be presented at the conference.
2. A valid student ID is required at the registration desk to check the eligibility for student-rate registration.
3. Registrations include access to conference sessions, a program book, souvenirs, a luncheon (Feb. 4), and coffee breaks.
4. Non-refundable author registration fees must be paid prior to the early registration due (Jan. 29, 2021).
5. For non-author registrations, absolutely no cancellations/refunds will be accepted after the early registration due (Jan. 29, 2021).



# Registration

## ■ Method of Payment

### \* Card

- Visa, Master, and JCB are available to use for online registration.
- Payment by credit card is available through the online procedure.
- All service charges on credit card are to be paid by registrants.
- Actual debit amount is subject to change according to the exchange rate.

### \* Bank Transfer

- All bank remittance charges are to be paid by registrants.
- Sender's name should be the registrant's name.

Bank Name	WOORI BANK
Account No.	192-05-027627
Swift Code	HVBKCRSE
Bank Address	1-203, Hoehyeon-dong, Jung-gu, Seoul, Korea
Beneficiary	Korea Information and Communications Society (KICS)
Beneficiary Address	#1504, 42, Seocho-daero 78-gil, Seocho-gu, Seoul 06626, Korea
Beneficiary TEL	+82-2-3453-5555

## ■ Refund Policy

If you have already registered for KICS Winter Conference 2021 and find that you are unable to attend or cancel the paper, please notify KICS Winter Conference 2021 secretariat in writing to [conf2@kics.or.kr](mailto:conf2@kics.or.kr) to request a refund and cancel your registration. Refund will be made upon receipt of this written notice after the conference. All bank service charges are to be paid by the registrant. No cancellations/refunds will be accepted after the early registration due (Jan. 29, 2021).

If you have any questions, please contact Registration Secretariat of KICS Winter Conference 2021 at [conf2@kics.or.kr](mailto:conf2@kics.or.kr)

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## Post Conference

KICS Winter Conference 2021 publishes published papers at the Post-Conference of the Electronic Information Research and Information Center for sharing research information and communicating, and operates a bulletin board to enable questions and answers related to theses. (Real time and always operating)

► Post-Conference : <http://www.eiric.or.kr/>

# Program at a Glance

Oral Session : February 3 (Wednesday) / Tower Condominium(1F)								
Room Time	Red Pine Room	Azalea Room	Birch Room	Yew Room	Ruby Room	Opal Room	Sapphire Room	Crystal Room
	1A	2A	3A	4A	5A	6A	7A	8A
13:00 - 14:20 (80)	Korean Saper Session	Korean Paper Session	Korean Paper Session	Korean Paper Session	Korean Paper Session	Korean Paper Session		
	1B	2B	3B	4B	5B	6B		8B
14:30 - 16:30 (120)	Korean Paper Session	Korean Saper Session	Korean Saper Session	Korean Saper Session	Korean Paper Session			
17:00 - 17:30 (30)	Keynote Speech (Emerald, Tower Condominium(1F))							

# Program at a Glance

Oral Session : February 4 (Thursday) / Tower Condominium(1F)								
Room Time	Red Pine Room	Azalea Room	Birch Room	Yew Room	Ruby Room	Opal Room	Sapphire Room	Crystal Room
08:30 - 09:50 (80)	9A	10A	11A	12A	13A	14A	15A	16A
	Korean Paper Session	Korean Paper Session	Korean Paper Session	Korean Paper Session	English Paper Session I Chair: Yong Joong Kim (Korea Polytechnic Colleges)	Korean Paper Session	Korean Paper Session	
10:00 - 11:20 (80)	9B	10B	11B	12B	13B	14B	15B	
	Korean Paper Session	Korean Paper Session	Korean Paper Session	Korean Paper Session	English Paper Session II Chair: Wonmin Son (Sogang University)	Korean Paper Session		
11:30 - 12:30 (60)	Lunch (Dragon Plaza Cafeteria)							
12:30 - 13:50 (80)	9C	10C	11C	12C	13C	14C	15C	16C
		Korean Paper Session	Korean Paper Session	Korean Paper Session	English Paper Session III Chair: Jiho Song (University of Ulsan)	Korean Paper Session		
14:00 - 15:20 (80)	9D	10D	11D	12D	13D	14D	15D	16D
	Korean Paper Session	Korean Paper Session		Korean Paper Session	English Paper Session IV Chair: Jemin Lee (DGIST)	Korean Paper Session		
15:30 - 16:50 (80)	9E	10E	11E	12E	13E	14E	15E	16E
	Korean Paper Session	Korean Paper Session	Korean Paper Session	Korean Paper Session	English Paper Session V Chair: Jong-Ho Lee (Soongsil University)			
17:00 - 18:20 (80)	9F	10F	11F	12F	13F	14F	15F	16F
	Korean Paper Session	Korean Paper Session	Korean Paper Session	Korean Paper Session	English Paper Session VI Chair: Illsoo Sohn (SEOULTECH)			

## Program at a Glance

Poster Session : February 4 (Thursday) / Tower Condominium(1F)	
Room Time	Emerald
08:30 - 09:50 (80)	17A : Poster Session I
10:00 - 11:20 (80)	17B : Poster Session II
11:30 - 12:30 (60)	Lunch (Dragon Plaza Cafeteria)
12:30 - 13:50 (80)	17C : Poster session III
14:00 - 15:20 (80)	17D : Poster Session IV
15:30 - 16:50 (80)	17E : Poster Session V
17:00 - 18:20 (80)	17F : English Poster Session Chair: Song Noh(Incheon National University)

Oral Session : February 5 (Friday) / Tower Condominium(1F)								
Room Time	Red Pine Room	Azalea Room	Birch Room	Yew Room	Ruby Room	Opal Room	Sapphire Room	Crystal Room
08:30 - 09:50 (80)	18A	19A	20A	21A	22A	23A	24A	25A
	Korean Paper Session	Korean Paper Session	Korean Paper Session	Korean Paper Session	Korean Paper Session	Korean Paper Session		
10:00 - 11:20 (80)	18B	19B	20B	21B	22B	23B		25B
	Korean Paper Session	Korean Paper Session	Korean Paper Session	Korean Paper Session	Korean Paper Session	Korean Paper Session		
11:30 - 12:50 (80)	18C	19C	20C	21C	22C	23C		25C
	Korean Paper Session	Korean Paper Session	Korean Paper Session	Korean Paper Session	Korean Paper Session	Korean Paper Session		

# Oral Sessions February 4 (Thursday), Tower Condominium(1F)

## 13A English Paper Session I

Chair: Yong Joong Kim(Korea Polytechnic Colleges)

Date: February 4 (Thursday) / 08:30~09:50 / Tower Condominium (1F), Ruby Room

- 13A-1 Lifetime Extension of Underwater Wireless Sensor Network using Multiple-AUVs**  
Syed Murtaza Rizvi, Ho-Shin Cho(Kyungpook National University)
- 13A-2 ECG Identification with One Dimensional Convolutional Neural Network**  
Ana Rahma Yuniarti,\*Syamsul Rizal,\*\*Ki Moo Lim  
(Universitas Pendidikan Indonesia,\*Telkom University,\*\*Kumoh National Institute of Technology)
- 13A-3 Monopolization of Unnecessary Resources using Distributed Antenna System in Uplink Traffic Scenario**  
Yelin Yoon, Jongyeon Park, and Saewoong Bahk(Seoul National University)
- 13A-4 A Study on the Securing Communication of Electric Vehicle Charging**  
Jeon Hee Do, Joo Kyung Ho, Lee Dong Hoon(Korea Universty)
- 13A-5 Split CSPDenseNet for Vision-Based UAV Classification in Heavily Deployed Surveillance Systems**  
Ali Aouto,Jae-Min Lee,Dong-Seong Kim(Kumoh National Institute of Technology)
- 13A-6 Autoencoder-based Anomaly Detection**  
Khoa Anh Ngo,Junhan Kim,Jiseob Kim,Jaseong Koo\*,Seungjae Baek\*,Byonghyo Shim  
(Seoul National Univ., \*Samsung Display)

## 13B English Paper Session II

Chair: Wonmin Son(Sogang University)

Date: February 4 (Thursday) / 10:00~11:20 / Tower Condominium (1F), Ruby Room

- 13B-1 Heterogeneous IoT Sensor Data Classification for Emergency Detection using Machine Learning**  
Cosmas Ifeanyi Nwakanma; Ade Pitra Hermawan; Jae Min Lee; Dong Seong Kim  
(Kumoh National Institute of Technology, Korea)
- 13B-2 Content-driven Joint Allocation of Communication and Computing Resources in Vehicular Networks**  
Xu Zhu; Fangfang Liu; Zhimin Zeng; Caili Guo; Jiujie Chen(Beijing University of Posts and Telecommunications, China)
- 13B-3 Network Localization with Assisting Nodes**  
Carlos A. Gomez-Vega,\*Zhenyu Liu,\*\*Carlos A. Gutierrez,Andrea Conti,\*Moe Z. Win  
(University of Ferrara,\*Massachusetts Institute of Technology,\*\*Universidad Autónoma de San Luis Potosí)
- 13B-4 Sensor Models for V2X Situational Awareness Learning**  
Igbafe Orikumhi,Sunwoo Kim(Hanyang University)
- 13B-5 A pilot power allocation for improving spectral efficiency of massive MIMO systems**  
Hieu Trong Dao, Sunghwan Kim(University of Ulsan)
- 13B-6 A Study on dynamic network slicing management for supporting flexible scalability in 5G network**  
Jeongyun Kim(ETRI)

# Oral Sessions February 4 (Thursday), Tower Condominium(1F)

## 13C English Paper Session III

Chair: Jiho Song(University of Ulsan)

Date: February 4 (Thursday) / 12:30~13:50 / Tower Condominium (1F), Ruby Room

- 13C-1      **Low-Complexity Bit to Symbol Mapper for VLC Systems with Generalized Spatial Modulation**  
Manh Le Tran, Sunghwan Kim(University of Ulsan)
- 13C-2      **Transmit Power Minimization in Intelligent Reflecting Surfaces Aided Uplink Communications**  
Jiao Wu, Yiyang Liu, and Byonghyo Shim(Seoul National University)
- 13C-3      **Factors influencing Internet search volume of OTT services in Korea**  
Soyoung Wang, Haewon Lee, Jaeyoung Park, Seongcheol Kim(Korea University)
- 13C-4      **A case study of key services in Korean cloud gaming market : Business model perspective**  
Jaeyoung Park, Seongcheol Kim(Korea University)
- 13C-5      **A Rotation-Based Beam Alignment Scheme in Millimeter Wave MISO Systems**  
Md. Abdul Latif Sarker, Igbafe Orikumhi, \*Sunwoo Kim(Hanyang University)
- 13C-6      **Gated Recurrent Unit-based UWB System Localization**  
Nguyen Doan Tan Anh, Jingon Joung(Chung-Ang UnivUniversity)

## 13D English Paper Session IV

Chair: Jemin Lee(DGIST)

Date: February 4 (Thursday) / 14:00~15:20 / Tower Condominium (1F), Ruby Room

- 13D-1      **Deep Learning for Object Detection Using Micro-Doppler Signatures in Autonomous Vehicles**  
Godwin Brown Tunze; Jae Min Lee; Dong Seong Kim(Kumoh National Institute of Technology)
- 13D-2      **Receiver Hop-Error Correction for Differential Frequency Hopping with Dynamic Frequency Transfer Function**  
Stephen Fahey; Lim Nguyen(University of Nebraska-Lincoln, USA)
- 13D-3      **Real-time Fault Diagnosis for Train Doors on Edge AI Device**  
Angela Caliwag, Donguk Kwon, Wansu Lim(Kumoh National Institute of Technology)
- 13D-4      **Deep learning-based image processing embedded on C# .NET**  
Cheska Abarro, Angela Caliwag, Donguk Kwon, Wansu Lim(Kumoh National Institute of Technology)
- 13D-5      **Increasing Range UAV Communication Links Using Multiple Antennas**  
Rajesh Kapoor(GLA University, Mathura, India)
- 13D-6      **Predicting Target Data Rates for Dynamic Spectrum Allocation Using Gaussian Process Regression**  
Judith Nkechinyere Njoku, Manuel Eugenio Morocho-Cayamcela, Angela Caliwag, \*Pei Xiao, Wansu Lim  
(Kumoh National Institute of Technology, \*University of Surrey)



# Oral Sessions February 4 (Thursday), Tower Condominium(1F)

## 13E English Paper Session V

Chair: Jong-Ho Lee(Soongsil University)

Date: February 4 (Thursday) / 15:30~16:50 / Tower Condominium (1F), Ruby Room

- 13E-1      **AWS Data Visualization using DynamoDB and Lambda**  
Ej Miguel Francisco Caliwag1,Angela Caliwag, Donguk Kwon, Wansu Lim(Kumoh National Institute of Technology)
- 13E-2      **Optimization of Face Detection Based on MTCNN Using Automated Model Compression Method**  
Erick Valverde,Angela Caliwag, Donguk Kwon, Wansu Lim(Kumoh National Institute of Technology)
- 13E-3      **DNN Power and Energy Consumption Analysis of Edge AI Devices**  
Henar Mike Canilang,Angela Caliwag, Donguk Kwon, Wansu Lim(Kumoh National Institute of Technology)
- 13E-4      **Implementation of MTCNN-based Face Detection Algorithm on Edge AI Device**  
James Rigor Camacho1,Angela Caliwag, Donguk Kwon, Wansu Lim(Kumoh National Institute of Technology)
- 13E-5      **Cellular Communication Support to Unmanned Aerial Vehicles (UAVs)**  
Rajesh Kapoor(GLA University, Mathura, India)

## 13F English Paper Session VI

Chair: Illsoo Sohn(SEOULTECH)

Date: February 4 (Thursday) / 17:00~18:20 / Tower Condominium (1F), Ruby Room

- 13F-1      **Optimizing Spectrum Sharing in UAV-to-UAV Cellular Communications**  
Judith Nkechinyere Njoku,Angela Caliwag, Jonghun Kwon, Wansu Lim(Kumoh National Institute of Technology)
- 13F-2      **A Practical Condition Monitoring Approach Using Normalized Modal Current and Support Vector Machine**  
Tanvir Alam Shifat,Jang Wook Hur(Kumoh National Institute of Technology)
- 13F-3      **Malicious Detection for Edge Computing-based in Industrial Internet of Things**  
Mareska Pratiwi Maharani,Jae-Min Lee,Dong-Seong Kim(Kumoh National Institute of Technology)
- 13F-4      **Convolutional Neural Network-based Foreign Object Debris (FOD) Detection System**  
Ann Janeth Garcia,Jae-Min Lee,Dong-Seong Kim(Kumoh National Institute of Technology)
- 13F-5      **An Experimental of Health Monitoring System using Wearable Devices and IoT**  
Rupali Kiran Shinde; Min Choi(Chungbuk National University)

# Poster Sessions February 4 (Thursday), Tower Condominium(1F)

## 17F English Poster Session

Chair: Song Noh(Incheon National University)

Date: February 6 (Thursday) / 17:00~18:20 / Tower Condominium (1F), Emerald Room

- 17F-1 Predicting ADHD in children using Vibraimage technology**  
Imran Ashraf, Soojung Hur, Gunzung Kim, Seung-Pil Jung, Yongwan Park(Yeungnam University)
- 17F-2 Improving Explainable Classification Networks by Maximizing Mutual Information**  
Joo Hyung Jun, Lee Jung Woo(Seoul National University)
- 17F-3 Capturing Korea's Social Issues using KR-WordBank Algorithm**  
Jiyeon Shin, Jungwoo Lee(Seoul National University)
- 17F-4 Cluster Balancing Scheme for Home Edge Computing (HEC)**  
Md. Sajjad Hossain, Fabliha Bushra Islam, Jae Min Lee and Dong-Seong Kim(Kumoh National Institute of Technology)
- 17F-5 Computation Offloading in Satellite Edge Computing – A Reinforcement Learning Approach**  
Thanh Phung Truong, Van Dat Tuong, Anh-Tien Tran, Chunghyun Lee, Sungrae Cho(Chung-Ang University)
- 17F-6 A Machine Learning-based Energy Prediction Scheme for Energy-Harvesting Base Station**  
Mohtasin Golan, Rubina Akter, Jae Min Lee and Dong-Seong Kim(Kumoh National Institute of Technology)
- 17F-7 An implicit Multi-hop Communication scheme based on Overhearing in IoT LoRa Networks**  
Mugerwa Dick, Hyunseok Choi, Youngju Nam, Yongje Shin, Euisin Lee(Chungbuk National University)
- 17F-8 DDoS Detection in Industrial Internet of Things Using Machine Learning**  
Esmot Ara Tuli, Jae Min Lee and Dong-Seong Kim(Kumoh National Institute of Technology)
- 17F-9 Implementantion Strategy of FTTH in Telcom Company for the Emerging 5G Networks**  
Yohana Jayanti Aruan, Jae Min Lee and Dong-Seong Kim(Kumoh National Institute of Technology)
- 17F-10 A Healthcare Management Mechanism based on ICN**  
Kamrul Hasan, Seong-Ho Jeong(HUFS)
- 17F-11 An ICN-enabled Cloud Architecture**  
Kamrul Hasan, Seong-Ho Jeong(HUFS)
- 17F-12 A Content Naming Mechanism for the ICN-based Networks**  
Nazib Abdun Nasir, Seong-Ho Jeong(HUFS)
- 17F-13 A Routing Mechanism for eHealth Information Delivery in an ICN-based Testbed**  
Nazib Abdun Nasir, Seong-Ho Jeong(HUFS)
- 17F-14 Determination of iBeacon Spacing for Indoor Localization**  
Tuan D. Vy, Thu L. N. Nguyen, Yoan Shin(Soongsil University)
- 17F-15 Reinforcement Learning Based Optimization for Drone Mobility in 5G and Beyond Ultra-Dense Networks**  
Jawad T., Ajung Kim(Sejong University)



## 1. Conference Venue : Yong Pyong Resort

URL : <https://www.yongpyong.co.kr/eng>



Yongpyeong Resort is a vast resort located on Daegwallyeong-myeon of Pyeongchang-gun, Gangwon-do. It is located on the eastern edge of Asia, about 200km from Seoul, the capital of Korea. It has become the “mecca of winter leisure” by recording the annual snowfall of 250cm. It is accredited by the International Ski Federation (FIS) and has hosted various international competitions like the 2018 Winter Olympic Alpine skiing events. Also, on its 4,300 acres, you will find a 45-hole Golf course, 28 ski slopes, premium hotels, European-style condominiums and many other leisure facilities that can be enjoyed.

### - Fact Sheet

Altitude	700 to 1,458m above sea level
Total Resort Area	4,300 acres
Snowfall	Annual average 250cm
Average Temperature	-6C
The number of slopes	28
The number of lifts	14(including 1 cable car)
Rental shops	3,000 sets of skis and snow boards
Other Facilities	Restaurants, Meeting Rooms, Leisure Sports facilities etc.





# Venue

## 3. Facility Information

Accommodations



Ski & Snowboard



Golf



Water Park



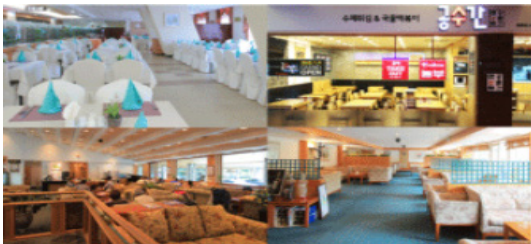
Banquet



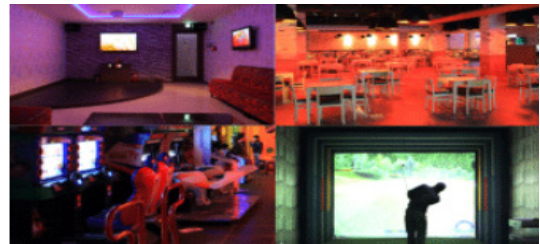
Leisure



Food & Bevergae



Entertainment



Restaurant, Food court, Cafe, Bar, etc.

Karaoke, Bowling, Billiard, Game, Golf, etc.

Shopping



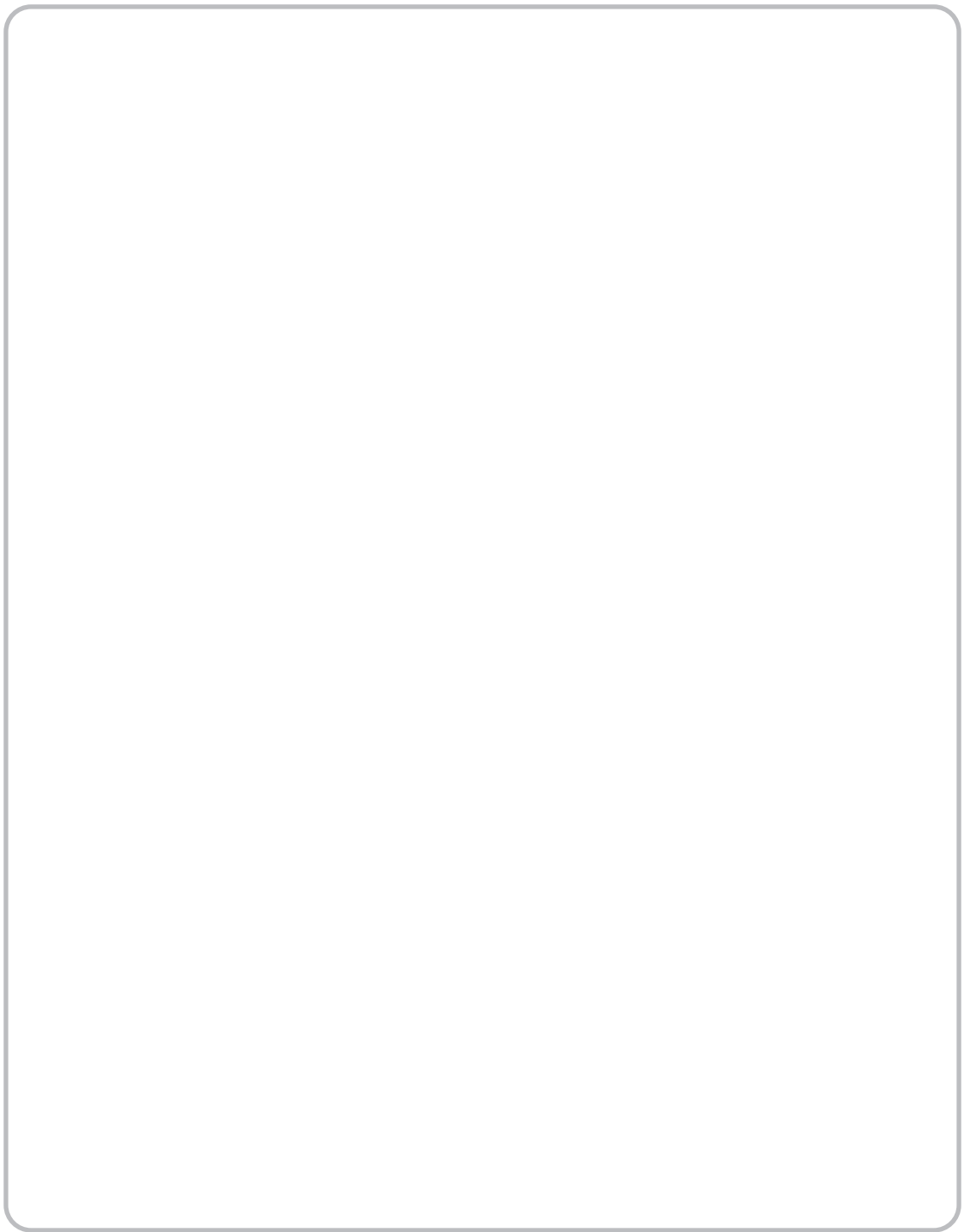
Sauna & Spa





# MEMO

## MEMO



최전방에서 대한민국을 지키는 **군인 자녀들에게**

# LG유플러스가 1:1 원격학습을 지원합니다

교육 여건이 부족한 최전방 지역 근무 군인 자녀들에게  
LG유플러스가 「U+초등나라」 전용 스마트 패드와  
대학생 멘토 선생님의 원격학습을 지원합니다

아이들의 꿈 옆에  
LG유플러스가 늘 함께하겠습니다





A person stands on a dark rock in the foreground, their arms raised in a gesture of triumph or awe. The background is a vast, deep blue night sky filled with countless stars and the soft, ethereal glow of the Milky Way galaxy stretching across the frame. The horizon is dark, with a hint of a sunset or sunrise glow in shades of orange and yellow at the bottom right.

**SAMSUNG**

# Experience the World of 5G with Samsung Networks

Samsung Networks has fully led the advancement of the telecommunications industry and we are delivering unimaginable speeds and superior connections. Samsung is continuing our commitment to pushing 5G innovations forward. Discover all the different ways Samsung 5G can change how you do just about everything.