



Smart Media
KOREAN INSTITUTE OF SMART MEDIA



In-Cooperation with
SIGAPP

SMA 2020

The 9th International Conference
on Smart Media & Applications

September 17-19, 2020 | Ramada Plaza Jeju, KOREA

PROGRAM BOOK



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Opening Address



Prof. Pankoo Kim

President, Korean Institute of Smart Media

Welcome to the 9th International Conference on SMA2020

Dear Korean Institute of Smart Media members and all participants here in this conference.

It is a great pleasure for me to welcome you all to the 9th Smart Media Applications conference. In particular, I would like to express my gratitude and a warm welcome to our plenary and invited speakers as well as the presenters, especially those who are joining us from overseas.

We are experiencing such an unprecedented experience this year due to COVID-19, hence our conference is running online as well as offline.

We are very fortunate to meet today in this outstanding conference in cooperation with ACM Special Interest Group of Application (SIGAPP) which combines all the best elements of

- A great future in Artificial Intelligence which is represented with Smart Information, Smart Services, as well as Smart Media Systems,
- Interact and exchange our ideas of making this life smarter which could be built into collaborated opportunities,
- The scope of new technology is stretching their limits further and further.

I have no doubt that the advancement of technology has brought and continue to bring significant changes in our daily lives' experiences. These changes are based on current research and you are going to explore this further from various research contributions.

I'd like to express my special thanks to the organising committee, program committee, invited speakers, reviewers, volunteers, and most of all participants – without you, it can't be the same.

I wish all and every one of you to have a fruitful time together at this another successful SMA in 2020.

I hope you have a fantastic time!

PanKoo Kim,

Honorable Conference chair of the 9th International Conference on SMA and President of KISM

Keynote Speech 1



Dr. Kenneth O. Stanley

Affiliation: Open AI

Title: "Open-Endedness: Beyond Today's AI"

Abstract: An open-ended process continues to invent, discover and innovate forever. Ideally, the artifacts of such a process also become increasingly complex and interesting over time. While open-endedness is certainly an aspect of human intelligence, featuring prominently in traits like creativity and invention, it is also evident in nature outside any form of conventional intelligence, such as in the evolution of life on Earth. In this way, open-endedness is both an essential property we hope to achieve in AI, but also an aspect of our reality that goes beyond AI as it emerges in natural processes. In fact, just as our intelligence is a product of evolution on Earth - an open-ended process - so might such a process ultimately be necessary to achieve strong AI.

Short Bio: Kenneth O. Stanley leads a research team at OpenAI on the challenge of open-endedness. He was previously Charles Millican Professor of Computer Science at the University of Central Florida and was also a co-founder of Geometric Intelligence Inc., which was acquired by Uber to create Uber AI Labs, where he was head of Core AI research. He received a B.S.E. from the University of Pennsylvania in 1997 and received a Ph.D. in 2004 from the University of Texas at Austin. He is an inventor of the Neuroevolution of Augmenting Topologies (NEAT), HyperNEAT, novelty search, and POET algorithms, as well as the CPPN representation, among many others. His main research contributions are in neuroevolution (i.e. evolving neural networks), generative and developmental systems, coevolution, machine learning for video games, interactive evolution, quality diversity, and open-endedness. He has won best paper awards for his work on NEAT, NERO, NEAT Drummer, FMSMC, HyperNEAT, novelty search, Galactic Arms Race, POET, and MCC. His original 2002 paper on NEAT also received the 2017 ISAL Award for Outstanding Paper of the Decade 2002 - 2012 from the International Society for Artificial Life. He is a coauthor of the popular science book, "Why Greatness Cannot Be Planned: The Myth of the Objective" (published by Springer), and has spoken widely on its subject.

Keynote Speech 2



Prof. Seong-Whan Lee

Affiliation: Department of Artificial Intelligence,
Korea University

Title: "Challenges and Opportunities in Brain-Computer Interfaces"

Abstract: Brain-computer interface (BCI) is a technology that controls external devices such as robot arms and robot legs by converting brain signals into computer commands. This technology, along with artificial intelligence (AI), is considered future technologies that will lead the fourth industrial revolution. Recently, global AI companies such as Facebook and Tesla have been developing technologies to commercialize BCI technology based on a large amount of capital and there is a growing interest in BCIs worldwide. In this talk, I will introduce a fundamental concept and the principle of BCI, along with the recent advances in BCI research at Korea University such as exoskeleton robot control, wheelchair control, and neuro-driving based on BCI. Additionally, we are performing various research, utilizing BCI technology, to detect the levels of consciousness for anesthesia and sleep, and to develop intuitive communication based on imagined speech. Also, we developed various machine learning techniques to increase the accuracy of classifying the user's intentions. The BCI can be directly used for efficient rehabilitation training as well as daily assistance for patients with physical discomfort, and can also be used as a technology to improve human intelligence as the next-generation interface. Detailed techniques and applications will be discussed in the talk..

Short Bio: Dr. Seong-Whan Lee is a full professor at Korea University, where he is the head of the Department of Artificial Intelligence. He is currently directing the pattern recognition and machine learning (PRML) lab at Korea University. He received the B.S. degree in computer science and statistics from Seoul National University, Seoul, Korea, in 1984, and the M.S. and Ph.D. degrees in computer science from Korea Advanced Institute of Science and Technology in 1986 and 1989, respectively. From February 1989 to February 1995, he was an Assistant Professor in the Department of Computer Science at Chungbuk National University, Cheongju, Korea. In March 1995, he joined the faculty of the Department of Computer Science and Engineering at Korea University, Seoul, Korea, and now he is the tenured full professor. In 2001, he stayed at the Department of Brain and Cognitive Sciences, MIT as a visiting professor. A Fellow of the IAPR (1998), IEEE (2010), and Korean Academy of Science and Technology (2009), he has served several professional societies as chairman or governing board member. He was the founding Editor-in-Chief of the International Journal of Document Analysis and Recognition and has been an Associate Editor of several international journals: Pattern Recognition, ACM Trans. on Applied Perception, IEEE Trans. on Affective Computing, Image and Vision Computing, International Journal of Pattern Recognition and Artificial Intelligence, and International Journal of Image and Graphics. He was the founding president of the Korean Society for Artificial Intelligence. His research interests include pattern recognition, artificial intelligence, and brain engineering. He has more than 500 publications in international journals and conference proceedings, and authored 10 books.

Overall Schedule

	September 17	September 18	September 19
10:00-10:30		Oral Session 1,2,3,4	Poster Q&A Session
10:30-11:00		Break Time	Closing Session
11:00-11:30		Oral Session 5,6,7,8	
11:30-12:00		Lunch Break	Lunch Break
12:00-12:30			
12:30-13:00			
13:00-13:30			
13:30-14:00			
14:00-14:30		Oral Session 9,10,11,12	
14:30-15:00	Opening Session	Break Time	Board Meeting
15:00-15:30		Oral Session 13,14,15,16	
15:30-16:00	Keynote 1		
16:00-16:30		Break Time	
16:30-17:00		Break Time	
17:00-17:30	Keynote 2	Oral Session 17,18,19,20	
17:30-18:00			
18:00-18:30		Best Paper Awards	

■ Program on September 18 (Oral Presentation) (Ramada Plaza Jeju Hotel Level 8)

	Tamra Hall(A) (Link #1)	Hanlla Hall(B) (Link #2)	Ora Hall(C) (Link #3)	Ara Hall(D) (Link #4)
10:00-11:00	Oral Session 1 Smart Information (1) (Paper ID. 2,18,20,23)	Oral Session 2 Contents/Services (1) (Paper ID. 1,11,21,24)	Oral Session 3 Smart Media (1) (Paper ID. 7,14,17,27)	Oral Session 4 Information Systems (1) (Paper ID. 3,4,5,8)
11:00-11:30		Break Time		
11:30-12:30	Oral Session 5 Smart Information (2) (Paper ID. 30,33,34,36)	Oral Session 6 Contents/Services (2) (Paper ID. 25,47,49,51)	Oral Session 7 Smart Media (2) (Paper ID. 45,57,58,61)	Oral Session 8 Information Systems (2) (Paper ID. 9,13,26,35)
12:30-14:00		Lunch Break		
14:00-15:00	Oral Session 9 Smart Information (3) (Paper ID. 48,50,52,53)	Oral Session 10 Contents/Services (3) (Paper ID. 66,75,77,83)	Oral Session 11 Smart Media (3) (Paper ID. 62,64,72,78)	Oral Session 12 Information Systems (3) (Paper ID. 39,41,43,70)
15:00-15:30		Break Time		
15:30-16:30	Oral Session 13 Smart Information (4) (Paper ID. 59,60,63,91)	Oral Session 14 Contents/Services (4) (Paper ID. 84,87,116,118)	Oral Session 15 Smart Media (4) (Paper ID. 80,106,111,123)	Oral Session 16 Information Systems (4) (Paper ID. 92,98,99,108)
16:30-17:00		Break Time		
17:00-18:00	Oral Session 17 Smart Information (5) (Paper ID. 97,100,122,159)	Oral Session 18 Contents/Services (5) (Paper ID. 121,155,156,157)	Oral Session 19 Smart Media (5) (Paper ID. 124,132,146,158)	Oral Session 20 Information Systems (5) (Paper ID. 112,131,133,136)

■ Program on September 19 (Online)

	(Link #1)	(Link #2)	(Link #3)	(Link #4)
10:00-11:00	Poster Q&A Session 1 Smart Information (Paper ID. 6,22,38,42,54, 67,68,76,79,85,86,96,104, 110,120,130,149)	Poster Q&A Session 2 Contents/Services (Paper ID. 10,19,40,55,69, 73,105,107,109,113,115,119 .126,129,134,150)	Poster Q&A Session 3 Smart Media (Paper ID. 28,74,81,82,89, 90,94,95,102,103,128,135, 141,142,148,151)	Poster Q&A Session 4 Information Systems (Paper ID. 12,15,29,31,46, 56,93,125,127,140,143,144, 145,147,152,153,154)
11:00-11:30		Closing Session		
11:30-14:00		Lunch Break		
14:00-16:00		SMA2020 Board Meeting		

Session Rooms & Chairs

September 17. Thursday

Time	Contents	Room	Chair
15:00 - 15:30	Opening Session	Online	Prof. Seokjoo Shin (Chosun Univ.)
15:30 - 16:30	Keynote 1	Online	Mr. Matthew Webster (GIST)
16:30 - 17:00	Break Time		
17:00 - 18:00	Keynote 2	Online	Mr. Matthew Webster (GIST)

September 18. Friday

(Ramada Plaza Jeju Hotel Level 8)

Time	Contents	Room	Chair
09:00 - 10:00	Registration		
	Oral Session 1	Tamra Hall	Prof. Soo-Hyung Kim (Chonnam National Univ.)
10:00 - 11:00	Oral Session 2	Halla Hall	Prof. Hoon Ko (Chosun Univ.)
	Oral Session 3	Ora Hall	Prof. Sang-Woong Lee (Gachon Univ.)
	Oral Session 4	Ara Hall	Prof. Myunggwon Hwang (UST/KISTI)
11:00 - 11:30	Coffee Break		
	Oral Session 5	Tamra Hall	Prof. Soo-Hyung Kim (Chonnam National Univ.)
11:30 - 12:30	Oral Session 6	Halla Hall	Prof. Kyungbaek Kim (Chonnam National Univ.)
	Oral Session 7	Ora Hall	Prof. Myunggwon Hwang (UST/KISTI)
	Oral Session 8	Ara Hall	Prof. Chang Choi (Gachon Univ.)
12:30 - 14:00	Lunch Break		
14:00 - 15:00	Oral Session 9	Tamra Hall	Prof. Jooyoung Kang (Ajou Univ.)
	Oral Session 10	Halla Hall	Prof. Hoon Ko (Chosun Univ.)
	Oral Session 11	Ora Hall	Prof. Kyungbaek Kim (Chonnam National Univ.)
	Oral Session 12	Ara Hall	Prof. Chang Choi (Gachon Univ.)
15:00 - 15:30	Coffee Break		
15:30 - 16:30	Oral Session 13	Tamra Hall	Prof. Jooyoung Kang (Ajou Univ.)
	Oral Session 14	Halla Hall	Prof. Kyungjin Cha (Hanyang Univ.)
	Oral Session 15	Ora Hall	Prof. Choong Kwon Lee (Keimyung Univ.)
	Oral Session 16	Ara Hall	Prof. Seokjoo Shin (Chosun Univ.)
16:30 - 17:00	Coffee Break		
17:00 - 18:00	Oral Session 17	Tamra Hall	Prof. GyooGun Lim (Hanyang Univ.)
	Oral Session 18	Halla Hall	Prof. Kyungjin Cha (Hanyang Univ.)
	Oral Session 19	Ora Hall	Prof. ChoongKwon Lee (Keimyung Univ.)
	Oral Session 20	Ara Hall	Prof. Seokjoo Shin (Chosun Univ.)
18:00 - 18:30	Best Paper Awards	Tamra Hall	Prof. Jong-Hyouk Lee (Sejong Univ.)

September 19. Saturday

Time	Contents	Room	Chair
10:00 - 11:00	Poster Q&A Session 1	Online	Prof. Hoon Ko (Chosun Univ.)
	Poster Q&A Session 2	Online	Prof. Sang-Woong Lee (Gachon Univ.)
	Poster Q&A Session 3	Online	Prof. Jong-Hyouk Lee (Sejong Univ.)
	Poster Q&A Session 4	Online	Prof. Kyungroul Lee (Daegu Catholic Univ.)
11:00 - 11:30	Closing Session		Prof. Seokjoo Shin (Chosun Univ.)
11:30 - 14:00	Lunch Break		
14:00 - 16:00	SMA2020 Board Meeting		

Oral / Poster Session Preparation

- I. **For oral presentation**, all presentations are scheduled on September 18. Each oral presentation time is 10 minutes with 3-4 minutes of QnA. Please prepare your presentation slides for your oral presentation. In case that you cannot attend in-person due to COVID-19, then please send an email to kism1122@kism.or.kr with your paper ID and title. For those who cannot attend due to COVID-19, then your video presentation file (10 minutes) is required to be sent to kism1122@kism.or.kr until September 15; otherwise your paper will not be included in the conference proceedings.
 - II. **For poster presentation**, all presentations are video streaming and scheduled on September 19. Each poster presentation time is 5-6 minutes. Please prepare your video presentation file (5-6 minutes) and send the file to kism1122@kism.or.kr until September 15; otherwise your poster paper will not be included in the conference proceedings. When you send your video presentation file, you must provide your paper ID and title also.
 - III. For poster presentation's QnA, it will be done in online from 10:00-11:00 on September 19. All poster authors must be online and try to best for answering to questions or comments on your poster. The online link for the poster QnA session will be announced at <https://sma-2020.github.io/program/>
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No-Show Policy

- I. "No Show" papers will be excluded from the nomination of the best paper award of the recommendation for the journal publication.
 - II. The list of "No Show" papers will be opened to the conference participants unless the authors report to the program committee before the session in case of emergencies.
 - III. Further restrictions or penalty can be applied to the authors of "No Show" papers.
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Oral Presentation A: Tamra Hall (Ramada Plaza Jeju Hotel Level 8)

Session 1 : Smart Information

10:00 - 11:00, Friday, September 18, 2020

Session Chair : Soo-Hyung Kim(Chonnam National University)

paper id **A Survey on Deep Learning for Cloud Radio Access Networks**

2 Rehenuma Tasnim Rodoshi, Seokjoo Shin and Wooyeol Choi (Chosun University)

Attention-Aware Linear Depthwise Convolution for Single Image Super-Resolution

18 Seongmin Hwang (Gwangju Institute of Science and Technology), Juhwan Lee (Chonnam National University), Cheolkon Jung (Xidian University) and Jinyoung Kim (Chonnam National University)

Deep learning-based defective product classification system for smart factory

20 Huy Toan Nguyen, Nu-Ri Shin, Gwang-Hyun Yu (Chonnam National University), Gyeong-Ju Kwon, Woo-Young Kwak (LINUXIT) and Jin-Young Kim (Chonnam National University)

A study on applying homomorphic filter and Deep Neural Network for apple trees diseases classification

23 Hoang-Trong Vo, Gwang-Hyun Yu, Huy-Toan Nguyen, Ju-Hwan Lee, Thanh-Vu Dang and Jin-Young Kim (Chonnam National University)

Break time: 11:00 ~ 11:30

Session 5 : Smart Information

11:30 - 12:30, Friday, September 18, 2020

Session Chair : Soo-Hyung Kim(Chonnam National University)

paper id **DPReLU: Dynamic Parametric Rectified Linear Unit**

30 Kien Mai Ngoc, Donghun Yang, Iksoo Shin, Hoyong Kim and Myunggwon Hwang (UST/KISTI)

Dataset Distillation for Core Training Set Construction

33 Yuna Jeong, Myunggwon Hwang and Wonkyung Sung (KISTI)

The Relationships between Capabilities and Values of Big Data Analytics

34 Byeonghwa Park (Kean University), Mijin Noh and Choong Kwon Lee (Keimyung University)

Synesthesia Information Collection Method through Auditory Conversion of Visual Information*

36 Gyumin Cho, Younkyung Jwa and Chang Wook Ahnv (GIST)

Oral Presentation A: Tamra Hall (Ramada Plaza Jeju Hotel Level 8)

Session 9 : Smart Information

14:00 - 15:00, Friday, September 18, 2020

Session Chair : Jooyoung Kang (Ajou University)

paper id **Malware Family Classification Model using Xception Network**

48 Soo Han Kim, Eul Gyu Im (Hanyang University) and Jong Hyun Kim (Electronics and Telecommunications Research Institute)

50 **Data Distribution Search to Select Core-Set for Machine Learning**

Myunggwon Hwang, Yuna Jeong and Wonkyung Sung (KISTI/UST)

52 **Data Poisoning Attack on Random Forest Classification Model**

Jun Young Chang and Eul Gyu Im (Hanyang University)

Android Malware Family Classification using Images from Dex Files

53 MunYeong Kang, Jihyeon Park, Seonghyun Park, Seong-je Cho (Dankook University) and Minkyu Park (Konkook University)

Break time: 15:00 ~ 15:30

Session 13 : Smart Information

15:30 - 16:30, Friday, September 18, 2020

Session Chair : Jooyoung Kang (Ajou University)

paper id **Human Action Recognition based on ST-GCN using Opticalflow and Image Gradient***

59 Jang Han-Byul, Kim Dae-Jin and Lee Chil-Woo (Chonnam National University)

Out-of-Distribution Detection Based on Distance Metric Learning

60 Donghun Yang, Iksoo Shin, Kien Mai Ngoc, Hoyong Kim, Chanhee Yu and Myunggwon Hwang (UST/KISTI)

Multimodal Fusion with Attention Mechanism for Trustworthiness Prediction in Car Advertisements

63 Van Thong Huynh, Soo-Hyung Kim, Hyungeong Yang, Gueesang Lee (Chonnam National University) and Jung-Hee Kim (North Carolina A&T State University)

A Secure Framework for Contactless Smartcards using Authentication Server to Prevent Relay Attack

91 Shaifali Narayan, Brij B Gupta (National Institute of Technology Kurukshetra), Ching-Hsien Hsu (Asia University) and Chang Choi (Gachon University)

Oral Presentation A: Tamra Hall (Ramada Plaza Jeju Hotel Level 8)**Session 17 : Smart Information****17:00 - 18:00, Friday, September 18, 2020****Session Chair : GyooGun Lim (Hanyang University)**

paper id **Image and Encoded Text Fusion for Deep Multi-Modal Clustering**

97 Do Truong Dong, Hyungjeong Yang, Kyungbaek Kim and Hyukro Park
(Chonnam National University)

100 **Demystifying ARM TrustZone TEE Client API using OP-TEE**

Heedong Yang and Manhee Lee (Hannam University)

122 **Multiple Classification with Split Learning**

Jongwon Kim, Sungho Shin, Yeonguk Yu, Junseok Lee and Kyoobin Lee (GIST)

159 **Enhanced Microgrid Functions for Topology Reconfiguration and Fault Restoration**

Xiancheng Wang and In-Ho Ra (Kunsan National University)

Oral Presentation B: Halla Hall (Ramada Plaza Jeju Hotel Level 8)

Session 2 : Contents / Services

10:00 - 11:00, Friday, September 18, 2020

Session Chair : Hoon Ko (Chosun University)

-
- paper id 1 **Extracting Control Features to Predict a Player's League in StarCraft II**
Chanmin Lee and Chang Wook Ahn (GIST)

- 11 **Use of Gaze and Hand Pointers in Mixed Reality Remote Collaboration**
Seungwon Kim, Allison Jing (University of South Australia), Hanhoon Park (Pukyong National University), Soo-Hyung Kim (Chonnam National University), In-Seop Na (Chosun University), Weidong Huang (UTS), Gun Lee and Mark Billinghurst (University of South Australia),

- 21 **Research on Exhibition Space Pedestrian Flow Line Design Based on Space Syntax Theory**
Qiuyan Cao (Shaoguan University), Jonghwan Seo and Hyunseok Han (Dong-A University)

- 24 **Conjoint analysis of user needs in mobile payment interface design**
Meng Qi (Guangxi Arts University), Jonghwan Seo and Jae-Hyung Byun (Dong-A University)

Break time: 11:00 ~ 11:30

Session 6 : Contents / Services

11:30 - 12:30, Friday, September 18, 2020

Session Chair : Kyungbaek Kim (Chonnam National University)

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- paper id 25 **The Definition and Attribute of Complex User Group in Design Research**
Lu Liu (JiuJiang University), Jonghwan Seo and Jaehyung Byun (Dong-A University)

- 47 **A Study on the Factors Affecting the Behavior of Internet Medical Apps**
Han Xiao, Kim hung woo and Hyun Dong Lee (Dong seo University)

- 49 **Acceleration of the Evolution of Visual Publication and Virtual Learning Impacted by COVID-19 Pandemic: Case Study**
Kwang-Yul Jeong and Simon Liu (JoVE)

- 51 **KERC 2019: The 1st Korean Emotion Recognition Challenge**
Inha Seo, Thi Tuong Vi Vo, Aran Oh, Guee-Sang Lee, Hyung-Jeong Yang and Soo-Hyung Kim (Chonnam National University)

Oral Presentation B: Halla Hall (Ramada Plaza Jeju Hotel Level 8)

Session 10 : Contents / Services

14:00 - 15:00, Friday, September 18, 2020

Session Chair : Hoon Ko (Chosun University)

paper id **Determinants of Social Media-Based Online Store Adoption**

66 Tazizur Rahman, Md. Abir Hossain (University of Barishal), Yang Sok Kim, Mijin Noh and Choong Kwon Lee (Keimyung University)

Reversing Obfuscated Control Flow Structures in Android Apps using ReDex Optimizer

75 Geunha You (Dankook University), Gyoosik Kim (Korea Telecom), Jihyeon Park, Seong-Je Cho (Dankook University) and Minkyu Park (Konkuk University)

Empirical Study on SAT-Encodings of the At-Most-One Constraint

77 Van-Hau Nguyen, Van-Quyet Nguyen (Hung Yen University of Technology and Education), Kyungbaek Kim (Chonnam National University) and Pedro Barahona (New University of Lisbon)

Information Bias Factor in Information Visualization

83 Dasol Kim and Sicheon You (Chosun University)

Break time: 15:00 ~ 15:30

Session 14 : Contents / Services

15:30 - 16:30, Friday, September 18, 2020

Session Chair : Kyungjin Cha (Hanyang University)

paper id **Mobile Robot with Eye-Gaze Interface**

84 Roman Rezenko, Ryoya Hase, Takenori Obo, Yousun Kang, and Duk Duk (Tokyo Polytechnic University)

Face Color Analysis by Body Temperature for a Mobile Device Application

87 Yousun Kang and Duk Shin (Tokyo Polytechnic University)

Smartphone-based Indoor Navigation System Using Particle Filter and Map-Constraints

116 Suhardi Azliy Junoh, Santosh Subedi and Jae-Young Pyun (Chosun University)

Korean Grammatical Error Correction based on Transformer with Copying Mechanisms and Grammatical Noise Implantation Methods

118 Myunghoon Lee, Hyeyonho Shin, Dabin Lee and Sung-Pil Choi (Kyonggi University)

Oral Presentation B: Halla Hall (Ramada Plaza Jeju Hotel Level 8)

Session 18 : Contents / Services

17:00 - 18:00, Friday, September 18, 2020

Session Chair : Kyungjin Cha (Hanyang University)

-
- paper id **Summarizing social media content via bio-inspired influence maximization algorithms**

121

Christian Esposito (University of Salerno), Vincenzo Moscato, Giancarlo Sperli (University of Napoli Federico II) and Chang Choi (Gachon University)

155

- Performance Enhancement Realization of Hybrid DGs in Microgrid under Uncertainties**

Thiruvenkadam Srinivasan, Hyuntae Kim and In-Ho Ra (Kunsan National University)

156

- Machine Learning for Energy Conservation of Microgrid under Fault and Varying Load Conditions**

Thiruvenkadam Srinivasan (Kunsan National University), Hyung-Jin Kim (Chonbuk National University) and In-Ho Ra (Kunsan National University)

157

- Study on Location Selection of 5G Base Station based on Voronoi Diagram**

Tao Yan (Putian University), In-Ho Ra (Kunsan National University) and Yan Che (Putian University)

Oral Presentation C: Ora Hall (Ramada Plaza Jeju Hotel Level 8)

Session 3 : Smart Media

10:00 - 11:00, Friday, September 18, 2020

Session Chair : Sang-Woong Lee (Gachon University)

- paper id **Region-based Selective Compression and Selective Encryption of Medical Images**
7
Ijaz Ahmad and Seokjoo Shin (Chosun University)

- 14 **Synergetic Butterfly Optimization Algorithm***
Tarun K. Sharma (Shobhit University Gangoh) and Chang Wook Ahn (GIST)

- 17 **Improving Recurrent Gate Mechanism For Time-to-Conversion Prediction Of Alzheimer's Disease**
Duy Phuong Dao, Ngoc Huynh Ho, Jahae Kim and Hyung Jeong Yang (Chonnam National University)

- 27 **Subword-based Sentence Representation Model for Sentiment Classification**
Danbi Cho, Hyunyoung Lee and Seungshik Kang (Kookmin University)

Break time: 11:00 ~ 11:30

Session 7 : Smart Media

11:30 - 12:30, Friday, September 18, 2020

Session Chair : Myunggwon Hwang (UST/KISTI)

- paper id **Korean Voice Annotation Program**
45 Sin Woo Lee (Chosun University) Jong Ho Paik (Seoul Women's University) and In Seop Na (Chosun University)

- 57 **Accelerating Parallel Evaluation of Regular Path Queries on Large Graphs by Estimating Joining Cost of Subqueries**
Van-Quyet Nguyen, Van-Hau Nguyen, Huy-The Vu, Minh-Quy Nguyen (Hung Yen University of Technology and Education), Quyet-Thang Huynh (Hanoi University of Science and Technology) and Kyungbaek Kim (Chonnam National University)

- 58 **Blind Image Watermarking Scheme for Image Authentication and Restoration with Improved Restoration Features**
Rishi Sinhal, Irshad Ahmad Ansari (Indian Institute of Information Technology Design and Manufacturin) and Chang Wook Ahn (GIST)

- 61 **Combining Reinforcement Learning with Supervised Learning for Sepsis Treatment***
Thanh Cong Do, Hyung Jeong Yang, Seok Bong Yoo (Chonnam national University) and In Jae Oh (Chonnam national University Medical School)

Oral Presentation C: Ora Hall (Ramada Plaza Jeju Hotel Level 8)

Session 11 : Smart Media

14:00 - 15:00, Friday, September 18, 2020

Session Chair : Kyungbaek Kim (Chonnam National University)

paper id 62	Blockchain-based renewable energy trading system with smart contract in a small local community Riseul Ryu and Soonja Yeom (University of Tasmania)
64	Multi-Task with Variational Autoencoder for Lung Cancer Prognosis on Clinical Data Thanh-Hung Vo, Guee-Sang Lee, Hyung-Jeong Yang, Sae-Ryung Kang, In-Jae Oh and Soo-Hyung Kim (Chonnam National University)
72	Determining Prosumer Energy Generation Performance as Basis for Peer-to-Peer Energy Trading Decisions using Monte Carlo Simulation Ralph Voltaire J. Dayot, Hyuntae Kim and In-Ho Ra (Kunsan National University)
78	CNN based Lung Indexing Method for DICOM CT Image Chulwoong Choi, Sungwoong Yeom, Hieyong Jeong and Kyungbaek Kim (Chonnam National University)

Break time: 15:00 ~ 15:30

Session 15 : Smart Media

15:30 - 16:30, Friday, September 18, 2020

Session Chair : ChoongKwon Lee (Keimyung University)

paper id 80	Font2Fonts: A modified Image to Image translation framework for font generation Debbie Honghee Ko, Ammar Ul Hassan, Saima Majeed and Jaeyoung Choi (Soongsil University)
106	Facial Expression Emotion through BCI-based Personal Traits and Emotion Classification Tae-Yeon Kim, Sang-Hyun Bae and Sung-Hwan Kim (Chosun University)
111	Multiple Models Using Temporal Feature Learning for Emotion Recognition Hoang Manh Hung, Soo-Hyung Kim, Hyung-Jeong Yang and Guee-Sang Lee (Chonnam National University)
123	Body Composition Area Identification from Low-radiation X-Ray image using Ensemble Learning Model Pusit Kulkasem (Burapha university), Watcharaphong Yookwan (Suranaree University of Technology) and Krisana Chinnasarn (Burapha university)

Oral Presentation C: Ora Hall (Ramada Plaza Jeju Hotel Level 8)**Session 19 : Smart Media****17:00 - 18:00, Friday, September 18, 2020****Session Chair : ChoongKwon Lee (Keimyung University)**

paper id **Automated Glaucoma Lesion Detection using Ellipse Descent Analysis**

124 Nilrat Kanyunthong (Burapha University), Annupan Rodtook (Ramkhamhaeng University) and Krisana Chinnasarn (Burapha University)

132 **Video Key Frame Extraction & Fire-Smoke Detection with Deep Compact Convolutional Neural Network**

Akm Ashiquzzaman, Dongsu Lee, Seung Min Oh, Yeong Gwang Kim, Ji Hoon Lee and Jinsul Kim (Chonnam National University)

146 **A Modified Generator for Multi-domain Transfer**

GeumBoon Lee (Chosun University)

158 **A Secure Cloud Storage Scheme Supporting Key Update and Ciphertext Evolution**

Shimao Yao and In-Ho Ra (Kunsan National University)

Oral Presentation D: Ara Hall (Ramada Plaza Jeju Hotel Level 8)

Session 4 : Information Systems

10:00 - 11:00, Friday, September 18, 2020

Session Chair : Myunggwon Hwang (UST/KISTI)

-
- paper id **Case Study: Continual Evaluation of IT Process Portfolio in SME based on Val IT 2.0***
3 Jan Lacina, Libor Měsíček (UJEP), Hoon Ko and Sung Bum Pan (Chosun Univ.)

- 4 **Energy Conservation Techniques for Flying Ad Hoc Networks**
Sabitri Poudel, Sangman Moh (Chosun University) and Jian Shen (NUIST)

- 5 **Energy-Efficient Data Gathering Schemes in UAV-Based Wireless Sensor Networks**
Rezoan Ahmed Nazib and Sangman Moh (Chosun University)

- 8 **Method of estimation of missing data in AMI system**
Hyuk-Rok Kwon (Kepco KDN) and Taek-Eun Hong (Chosun University)

Break time: 11:00 ~ 11:30

Session 8 : Information Systems

11:30 - 12:30, Friday, September 18, 2020

Session Chair : Chang Choi (Gachon University)

-
- paper id **Experimental Comparison of Traffic Analysis Adversaries in Event Monitoring Wireless Networks**
9 Lilian C. Mutalemwa and Seokjoo Shin (Chosun University)

- 13 **Comparison of Deep Learning based Fish Detection Performance for Real-Time Smart Fish Farming**
Younghak Shin, Jeonghyeon Choi and Han Suk Choi (Mokpo National University)

- 26 **Analysis of Bio-signal based Biometrics Application Technique Trends for Smart Connected Car**
Igor Lyebyedyev (William Paterson University of New Jersey), Gyu Ho Choi (Chosun University), Kiho Lim (William Paterson University of New Jersey) and Sung Bum Pan (Chosun University)

- 35 **SLA-Aware Adaptive Mapping Scheme in Bigdata Distributed Storage Systems**
Sopanhapich Chum, Jongmoo Choi (Dankook University), Jerry Li and Heekwon Park (Samsung Electronics)

Oral Presentation D: Ara Hall (Ramada Plaza Jeju Hotel Level 8)**Session 12 : Information Systems****14:00 - 15:00, Friday, September 18, 2020****Session Chair : Chang Choi (Gachon University)**

- paper id 39 End-to-end Deep Network for Image Denoising and Colorization**
Khoa Tran Van (VNU University of Engineering and Technology), Vinh Dinh Quang, Tuan-Duc Nguyen (Vietnamese German University), Phuc Nguyen Hong, Narayan Debnath C (Eastern International University) and Chang Wook Ahn (GIST)
- 41 Single Image Dehazing Using End-to-End Deep-Dehaze Network**
Masud An-Nur Islam Fahim and Ho Yub Jung (Chosun University)
- 43 Complex information processing networks of EEG oscillations during voluntary movements**
Han-Gue Jo (Kunsan National Universit), Lisa Wagels (RWTH Aachen University), Mikhail Votinov (Research Center Jülic) and András Puszta (University of Oslo)
- 70 Q-Learning-based Resource Allocation with Priority-based Clustering for Heterogeneous NOMA Systems**
Sifat Rezwan and Wooyeon Choi (Chosun University)

Break time: 15:00 ~ 15:30**Session 16 : Information Systems****15:30 - 16:30, Friday, September 18, 2020****Session Chair : Seokjoo Shin (Chosun University)**

- paper id 92 Detection of Spammer Account through Rumor Analysis in Online Social Networks**
Somya Ranjan Sahoo, Brij B Gupta (National Institute of Technology Kurukshetra), Chang Choi (Gachon University) and Christian Esposito (University of Salerno)
- 98 IoT Powered Cancer Observation System**
Osama Rehman (Bahria Univ. Karachi Campus), Zaroon Farrukh (TPS Worldwide), Asiya Al-Busaidi (Makers Oman), Kyungjin Cha (Hanyang University), Simon J. Park and Ibrahim M. H. Rahman (The Open Polytechnic of New Zealand)
- 99 LoRa Mesh Network for Smart Metering in Rural Electrification**
Anup Marahatta, Yaju Rajbhandari, Ashish Shrestha (Kathmandu University), Ajay Singh (Tribhuvan University), Anup Thapa (Kathmandu University) and Seokjoo Shin (Chosun University)
- 108 A Pooling Function based on Differential Evolution for Multiple Instance Learning**
Kamanasish Bhattacharjee, Arti Tiwari, Millie Pant (Indian Institute of Technology Roorkee) and Chang Wook Ahn (GIST)

Oral Presentation D: Ara Hall (Ramada Plaza Jeju Hotel Level 8)**Session 20 : Information Systems****17:00 - 18:00, Friday, September 18, 2020****Session Chair : Seokjoo Shin (Chosun University)**paper id
112**Cost-Effective Container Orchestration Using Usage Data**

Youseok Nam and Hwansoo Han (Sungkyunkwan University)

Performance Analysis of ZigBee-based IoT Prototype for Remote Monitoring in Power Grid Systems

131

Saqib Ali (Sultan Qaboos University), Osama Rehman (Bahria University Karachi Campus), Kyungjin Cha (Hanyang University), Taisira Al Balushi and Zia Nadir (Sultan Qaboos University)

133

An improvement of supplementary book suggestion system

Benchamawan Chaisoongnoen and Komate Amphawan (Burapha University)

NILR: N-Most Interesting Location-based Recommender System

136

Sumet Darapisut, Komate Amphawan, Sunisa Rimcharoen and Nutthanon Leelathakul (Burapha University)

Poster Q&A Presentation A

Session 1: Smart Information

10:00 - 11:00, Saturday, September 19, 2020

Session Chair : Hoon Ko (Chosun University)

- paper id **Performance Simulation Tools for MAC Protocols in the Internet of Things**
6 Shreya Khisa and Sangman Moh (Chosun University)
- 22 **Convolutional Neural Network-based image retrieval with degraded samples**
Thanh Vu Dang, Gwanghyun Yu, Huy Toan Nguyen, Hoang Trong Vo, Juhwan Lee and Jinyoung Kim (Chonnam National University)
- 38 **Building a Data Model for Portable Atmospheric Environment Measurement System**
Soohyeon Chae, Jangwon Gim and Sukhoon Lee (Kunsan National University)
- 42 **Image Retrieval Based on Dual Rearrangement of Object Corner Point***
Youngeun An, Taeyeun Kim and Sungbum Pan (Chosun University)
- 54 **Caching Cost Model for In-memory Data Analytics Framework**
Minseop Jeong, Seongsoo Park and Hwansoo Han (Sungkyunkwan University)
- 67 **Detection Model of Heavy Equipment Using YOLOv3 while Driving**
Won Seok Lee, Hee Jun Lee, Choong Kwon Lee (Keimyung University) and Kyung Nam Ko (Korea Gas Corporation)
- 68 **A Study of the Classification of IT Jobs Using LSTM and LIME**
In Hyeok Choi, Yang Sok Kim and Choong Kwon Lee (Keimyung University)
- 76 **Document Image Binarization with Contour and Feature Supervision**
Quang-Vinh Dang and Guee-Sang Lee (Chonnam National University)
- 79 **AutoEncoder Based Feature Extraction for Multi Malicious Traffic Classification**
Sungwoong Yeom, Chulwoong Choi and Kyungbaek Kim (Chonnam National University)
- 85 **A Study on the Clothes Classification using AlexNet Deep Learning**
Hye Yeon Son, Min Seon Lee and Sun-Kuk Noh (Chosun University)
- 86 **Comparison of Attention Module for Acoustic Scene Classification**
Nisan Aryal and Sang-Woong Lee (Gachon University)
- 96 **Digital Marketing and Cultural Big Data Platform**
Jong Youl Hong (Hankuk University of Foreign Studies), Hoon Ko (Chosun University) and Libor Měšíček (UJEP)
- 104 **A Study on the Auxiliary Memory Object Detection Technology Using RetinaNet**
Jun-Yeong Kim, Jun Park (Sunchon National University), Se-Hoon Jung (Andong National University) and Chun-Bo Sim (Sunchon National University)

-
- 110 **Design of Smart Livestock Platform Based on Digital Twin and Artificial Intelligence**
Namho Kim (Honam University) and Heeja Jeong (HunetGaia Co. Ltd)
- 120 **Design of Queue Management Algorithm based on Deep Reinforcement Learning**
SeolRyung Jung, JinGwang Koh and SungKeun Lee (Sunchon National University)
- 130 **Study on Human Activity Recognition Using semi-Supervised Active Transfer Learning**
Seung Min Oh, A K M Ashiquzzaman, Dong Su Lee, Ji Hoon Lee, Yeong Gwang Kim, Jae Hyung Park and Jin Sul Kim (Chonnam National University)
- 149 **An improved Data Independent Method with Bi-directional LSTM Network based Biometric ECG Authentication**
Htet Myet Lynn, Pankoo Kim and Sung Bum Pan (Chosun University)
-

Poster Q&A Presentation B

Session 2: Contents/Services

10:00 - 11:00, Saturday, September 19, 2020

Session Chair : Sang-Woong Lee (Gachon University)

- | | |
|----------------|---|
| paper id
10 | Genetic Optimizing Method for Real-time Monte Carlo TreeSearch Problem
Man-Je Kim (GIST), Jong-Hyun Lee (Sungkyunkwan University) and Chang Wook Ahn (GIST) |
| 19 | A Text-to-Dynamic Image Generation Method using Feature Information of Video
Taekeun Hong, Kangmin Kim, Pankoo Kim (Chosun University) and Kiho Lim (William Paterson University of New Jersey) |
| 40 | Survey and Performance Test of Python-based Libraries for Parallel Processing
TaeHong Kim, YoonSeok Cha (GenoTech Inc.), ByeongChun Shin (Chonnam National University) and Byungrae Cha (GIST & GenoTech Inc.) |
| 55 | A Survey on High-Dimensional Medical Data Clustering
Velmurugan Arresh Balaji, Chulwoong Choi and Kyungbaek Kim (Chonnam National University) |
| 69 | Squeeze U-SegNet: A CNN architecture for Automatic segmentation of brain MRI
Chaitra Dayananda, Nagaraj Yamanakkanavar and Bumshik Lee (Chosun Univ.) |
| 73 | Multitask Learning with Boundary Awareness for Skin Lesion Segmentation
Phan Tran Dac Thinh, Soo-Hyung Kim, Guee-Sang Lee, Hyung-Jeong Yang (Chonnam National University) |
| 105 | Expressing metonymic information in visual communication - Focused on emoticons -
Chanhee Kim and Si Cheon You (Chosun University) |
| 107 | Emotion and Collaborative Filtering-Based Recommendation System
Tae-Yeun Kim and Sung-Hwan Kim (Chosun University) |
| 109 | Design of a dancing robot for creative learning based on open source
Namho Kim (Honam University) |
| 113 | The Urbanization Effect of Mega Sports Events Using Landsat Satellite Image Data: Focused on Pyeongchang Olympics
Patrick Wyson Ziba (Under Ministry of Finance), Jin Woo Do, Ju Young Kang (Ajou University) and Seong Sik Yoon (Korea Investment Corporation) |
| 115 | Transferring Convolutional Layer for Satellite Image Processing
Yan Ji Piao (Yanbian University), Sang Ho Ahn, Se Hyoung Kim, Jae Hyung Park and Ju Young Kang (Ajou University) |
| 119 | Augmented reality technology through synchronization of real and virtual camera
Hyung-Jin Park, Myoung-Bae Seo and Do-Sik Kim (KICT) |

- 126 **Aspects of Providing Robotic Healthcare Services for the Elderly based on HRI-enabled Applications in a Healthcare Community Center**
Yoosang Park, Jongsun Choi and Jaeyoung Choi (Soongsil University)
- 129 **Towards Sensor-Cloud Based Efficient Smart Healthcare Monitoring Framework using Machine Learning**
Khadak Singh Bhandari (Jeonbuk National University) Changho Seo (Kongju National University) and Gi Hwan Cho (Jeonbuk National University)
- 134 **Security Threat Analysis on Broadcast Channel in Mobile Network***
Insu Oh, Eunseon Jeong, Junyoung Park, Keunkyoung Kim, Myoungsu Kim and Kangbin Yim (Soonchunhyang University)
- 150 **Information Provider Service Factor into user's Perception of Informatization Performance According to Information Use Patterns***
Youngshim Kim (Chosun University)
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Poster Q&A Presentation C

Session 3: Smart Media

10:00 - 11:00, Saturday, September 19, 2020

Session Chair : Jong-Hyouk Lee (Sejong University)

- | | |
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| paper id
28 | Simulated Design of AR-Based Urban Landscape using Drone
Dongyoun Lee and Myung-Bae Seo (Korea Institute of Civil Engineering and Building Technology) |
| 74 | Deep Learning-Based Inpainting for Chest X-ray Image
Minh-Trieu Tran, Soo-Hyung Kim, Hyung-Jeong Yang and Guee-Sang Lee (Chonnam National University) |
| 81 | Multi-prototype Morpheme Embedding for Text Classification
Hyejin Won, Hyunyoung Lee and Seungshik Kang (Kookmin University) |
| 82 | Types of Students' Cognition of E-Learning Experience: Q methodological Approach
Lin Zheng Lin and Seo Jong-Hwan (Dong-A University) |
| <hr/> | |
| 89 | Cascade AOA Estimation Technique Based on Uniform Circular Array
Tae-yun Kim (Chosun University), Dongbin Lee Lee (Oregon Institute of Technology) and Suk-seung Hwang (Chosun University) |
| 90 | Developing a Korean QA Chatbot for a Medical Domain Using a Multi-step Retrieval Approach
Min-Su Jeong (Sungkyunkwan University), Su-Jeong Song (Sungkyunkwan University of Medicine) and Yun-Gyung Cheong (Sungkyunkwan University) |
| 94 | Non-Face-to-Face and Contactless Preference Survey System
KwangCheol Rim (Chosun University) |
| <hr/> | |
| 95 | Development of VR-based Road Noise Simulation Prototype
Sanggyu Lee and Myoung-Bae Seo (Korea Institute of Civil Engineering and Building Technology) |
| 102 | Evaluation of Drowsy Driver Detection Schemes: Feasibility Test for Processing-in-Vehicle
Kwanghee Lee and Jongmoo Choi (Dankook University) |
| <hr/> | |
| 103 | Structures Stereo Camera based Twin Camera Module System
Tae-Yeon Kim, Sung-Hwan Kim and Sang-Hyun Bae (Chosun University) |
| <hr/> | |
| 128 | LSTM-Based Multi-Modal Sentiment Recognition for Psychological Counseling Chatbot*
MyungJin Lim and JuHyun Shin (Chosun University) |
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| 135 | Automatic Rap Lyrics Generation with Rhymes Through Korean Syllables
Chansol Park and Yun-Gyung Cheong (Sungkyunkwan University) |

-
- 141 **Study of Hand Motion Signal Detection and Frame Extraction Using Frequency Analysis by Electric Field Sensors**
Seonil Jeong and Youngchul Kim (Chonnam National University)
-
- 142 **Real-Time Hand Motion Frame Extraction Using Electric Potential Sensors**
Hunmin Lee, Seonil Jeong and Youngchul Kim (Chonnam National University)
-
- 148 **A Method for Scenario-Movie Scene Generation Using Modified MirrorGAN**
Kyung-Ho Yu, Eun-Bin Pak and Pan-Koo Kim (Chosun University)
-
- 151 **First Responder Positioning and Localization based on Optimal Anchor Access Point Selection using Minimum Uncertainty Propagation for Disaster Scenarios**
Regin A. Cabacas (West Visayas State University) and In-Ho Ra (Kunsan National University)
-

Poster Q&A Presentation D

Session 4: Information Systems

10:00 - 11:00, Saturday, September 19, 2020

Session Chair : Kyungroul Lee (Daegu Catholic University)

- | | |
|----------------|--|
| paper id
12 | A study on how to build a small energy-independent smart farm
Soon-yeol Kwon, Hye-yoon Jung (KEPCO KDN) and Pan-Koo Kim (Chosun University) |
| 15 | Deep learning-based rice seed segmentation for high-throughput phenotyping*
Yuseok Jeong, Junghan Lee, Myeongjun Park, Hongro Lee, Changwoo Lee (Kunsan National University), Jeong-Ho Baek and Kyung-Hwan Kim (RDA) |
| 29 | Draft Design of Fruit Object Recognition using Transfer Learning in Smart Farm
YoonSeok Cha, TaeHong Kim, Daekyu Kim (GenoTech Inc.) and Byungrae Cha (GIST & GenoTech Inc.) |
| 31 | Prototype of Strawberry Maturity-Level Classificationto Determine Harvesting Time of Strawberry
TaeHong Kim, SooHee Oh (GenoTech Inc.), Byungrae Cha (GIST & GenoTech Inc.), Sun Park (GIST) and JaeHyun Seo (Mokpo National University) |
| 46 | Unsupervised Method for Measuring Smart Home Service Quality through Gap Analysis and Dependency Parsing
Changhyun Lee, Hyunjin Bae, Kyung Jin Cha and Gyoo Gun Lim (Hanyang University) |
| 56 | Survey on Reinforcement Learning based Efficient Routing in SDN
Hong-Nam Quach, Sungwoong Yeom and Kyungbaek Kim (Chonnam National University) |
| 93 | Bayesian Wasserstein GAN and Application for Vegetable Disease Image Data*
Wanhyun Cho, Myung-Hwan Na, Sora Kang (Chonnam National University) and Sangkyoon Kim (Mokpo National University) |
| 125 | Development of electronic library chatbot system using SNS-based mobile chatbot service*
Hyunho Park, HyoungJu Kim and Pan-Koo Kim (Chosun University) |
| 127 | Pig Farm Environment Sensor Data Correlation and Heatmap Analysis for Predicting Sensor Remaining Useful Life
Lee Ji Hoon, Oh Seung Min Kim, Yeong Gwang, Lee Dong Su, Akm Ashiquzzaman and Kim Jin Sul (Chonnam National University) |
| 140 | Fish Activity State and Fuzzy Inference based an Intelligent Fish Feeding Model
Han Suk Choi, Jeong Hyeon Choi, Kyung Woo Park, Seok Won Jung, Han Kyu Lim and Younghak Shin (Mokpo National University) |
| 143 | A Study on the Expert Recommendation System Using Social Network-Based Reliability Measurement Algorithm
Namhong Park (Chosun University) |

Design of BIM-based Virtual-Reality Simulation System*

- 144 MyoungBae Seo, HyungJin Park, DongYoun Lee and SangGyu Lee (Korea Institute of Civil Engineering and Building Technology)
-

Conceptual Space Design Based on Word Embedding for Dynamic Metaphor Network Construction

- 145 HyoungJu Kim, JunHo Choi, Dong Won Seo and PanKoo Kim (Chosun University)
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An EFA for Software Development Environments

- 147 Kwang Yoon Song and In Hong Chang (Chosun University)
-

Classifier Comparison for Two Distinct Applications Using Same Data

- 152 Sai Bharadwaj Appakaya, Ravi Sankar (University of South Florida) and In-Ho Ra (Kunsan National University)
-

Cooperative Influence Learning

- 153 Harshit Srivastava (University of South Flori), In-Ho Ra (Kunsan National University) and Ravi Sankar (University of South Flori)
-

Early Stage Diagnosis of Parkinson's Disease Using HOS Features of EEG Signals

- 154 Seyed Alireza Khoshnevis (University of South Florida), In-Ho Ra (Kunsan National University) and Ravi Sankar (University of South Florida)
-

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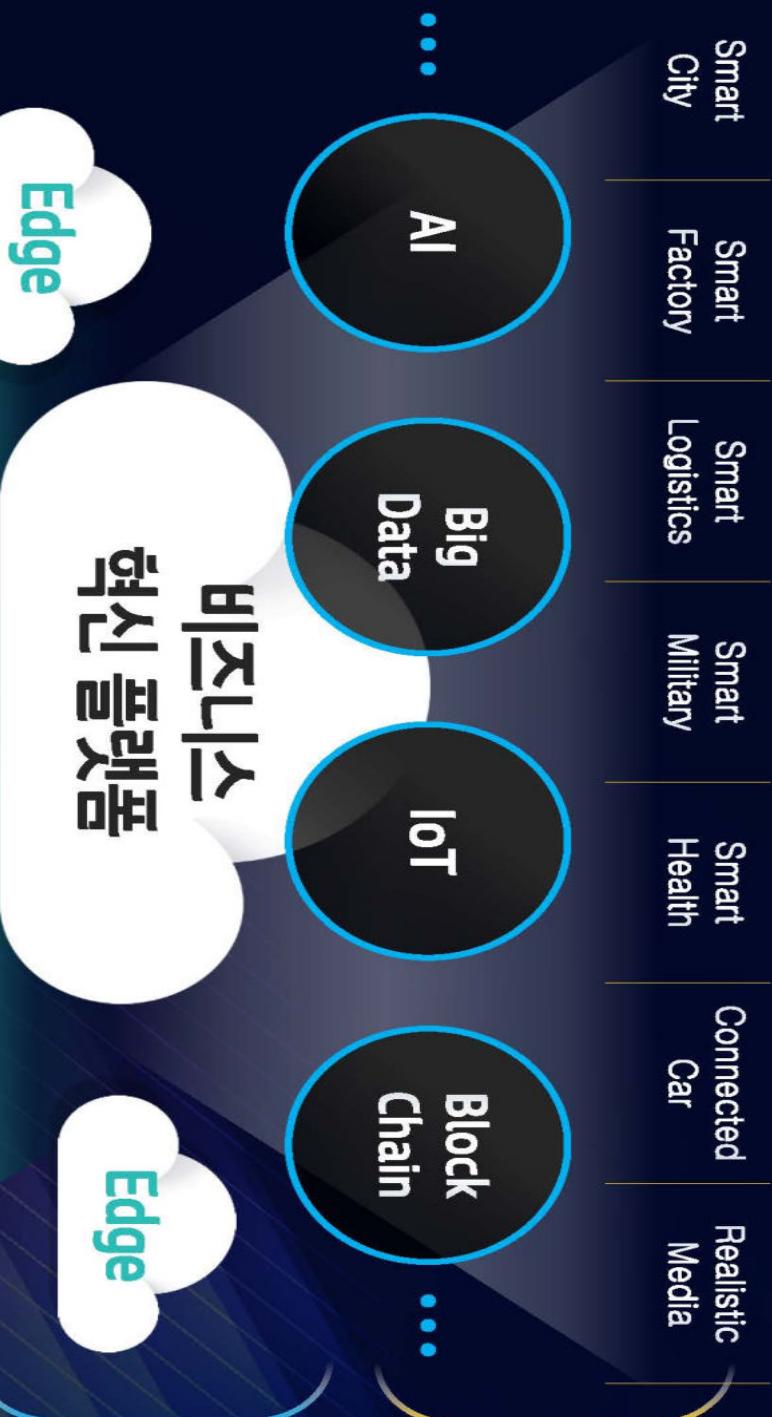
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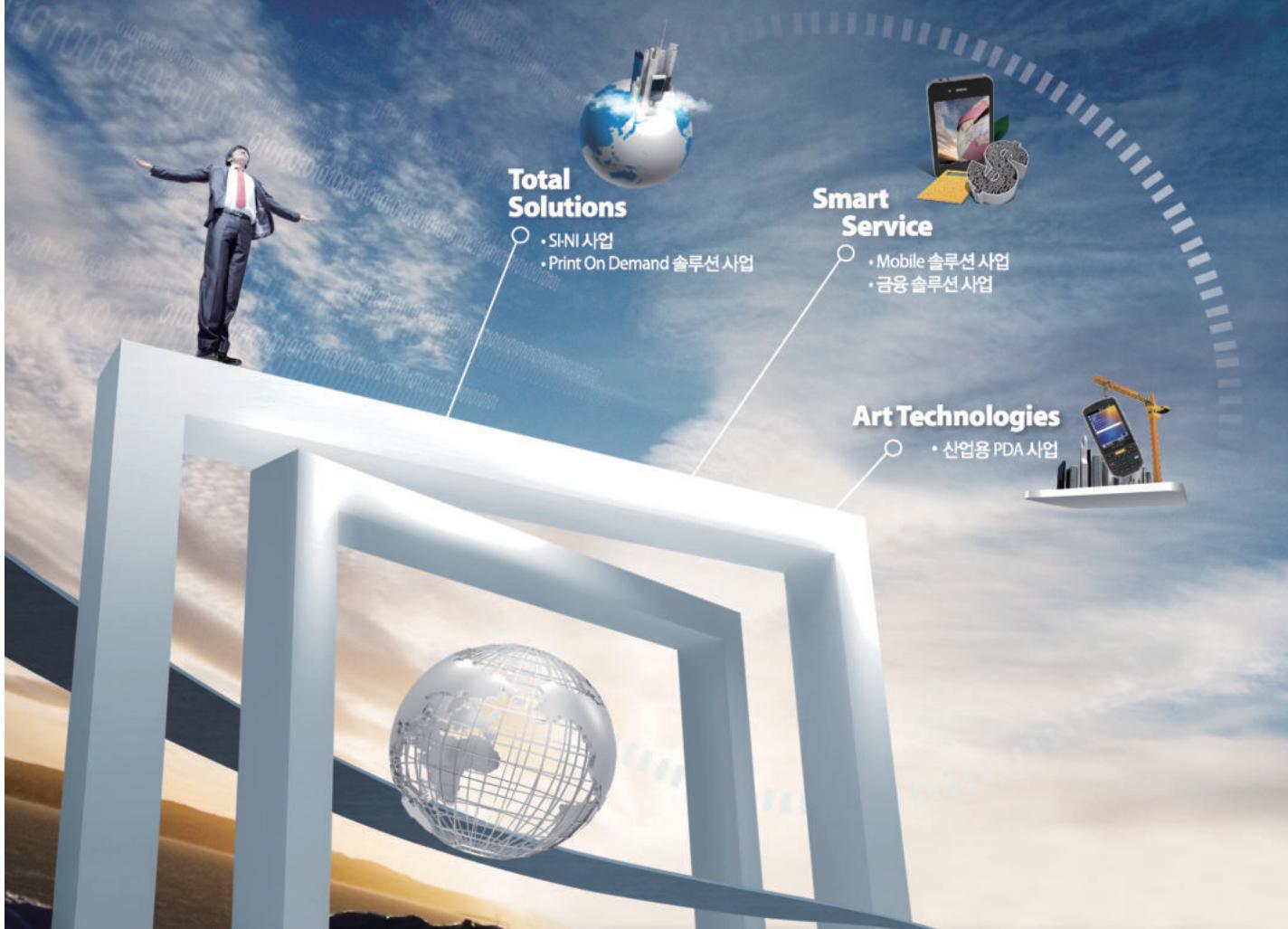


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