

# CHUNG-YEON LEE

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## RESEARCH INTERESTS

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**Machine Learning:** Spatial representation, Generative models, Anomaly detection

**Robotics/Vision:** Mobile manipulation, Multimodal perception, Visual SLAM, Neural rendering

**Cognitive Neuroscience:** Memory encoding and retrieval, Visuo-spatial perception

**Other Topics:** Augmented/virtual reality, Life-logging data analysis

## EDUCATION

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- 2013 – Pres. Ph.D. Candidate in Computer Science and Engineering, Seoul National University, Korea
- Research Topic: Memory and thinking models for cognitive agents that learn everyday life
  - Marks: 3.80 GPA (on a 4.3 GPA scale)
- 2011 – 2013 M.S. in Interdisciplinary Program in Neuroscience, Seoul National University, Korea
- Grad. Thesis: EEG Correlates of Multimodal Episodic Memory Formation
  - Marks: 3.49 GPA (on a 4.3 GPA scale)
- 2003 – 2010 B.S. in Multimedia Engineering, Sungkyul University, Korea
- Grad. Thesis: Automatic Tagging Scheme based on Face Recognition
  - Marks: 4.38 GPA (on a 4.5 GPA scale), *graduate with honor*

## ACADEMIC EXPERIENCES

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- 2011 – Pres. Research Assistant, Biointelligence Laboratory, Seoul National University, Seoul, Korea
- Advisor: Professor Byoung-Tak Zhang
  - Topics: Machine learning, AI robots, Cognitive neuroscience
- 2018 Visiting Student, Institute for Artificial Intelligence, Universität Bremen, Germany
- Advisor: Professor Michael Beetz
  - Topics: Visual imitation learning for service robots
- 2011 Visiting Student, Artificial Intelligence Group, Universität Bielefeld, Germany
- Advisor: Professor Ipke Wachsmuth
  - Topics: Learning to read user intentions from multimodal data of VR environment

- 2011 Visiting Student, [Intelligent Autonomous Systems Group](#), TUM, Germany  
 • Advisor: Professor Michael Beetz (now at Uni. Bremen)  
 • Topics: Learning and generation of human motion using Boltzmann machines
- 2008 – 2011 Research Assistant, [XICOM Laboratory](#), Sungkyul University, Anyang, Korea  
 • Advisor: Professor Seongah Chin  
 • Topics: Facial expression synthesis/recognition, Brain-computer interface

## **RESEARCH PROJECT PARTICIPATIONS**

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- 04/18–Present Development of Human-care Robot Technology for Aging Society  
 Institute for Information & Communications Technology Promotion (IITP), Korea  
*\*Partly developed a mapping and navigation module and a robot interface for AI services*
- 03/15–Present Cognitive Agents That Learn Everyday Life (SW Star Lab Project)  
 Institute for Information & Communications Technology Promotion (IITP), Korea  
*\*Served as the project manager and the open-source manager*
- 11/16–03/21 Autonomous Learning in Mobile Cognitive Machines  
 Air Force Office of Scientific Research (AFOSR), USA
- 04/17–03/19 Service Technology Development for Noninvasive Diagnosis and Management of Sleep and Sleep Environment  
 Ministry of Trade, Industry and Energy, Korea
- 02/18–01/19 Self-Programming Cognitive Robots based on Learning from Human Behavior Data  
 National Research Foundation (NRF), Korea
- 02/18–09/18 Humanoid Robot PoC (SLAM & Navigation Part)  
 EMART Inc., Korea
- 12/14–11/15 One-Shot/Incremental Learning-based Object Recognition Algorithm,  
 NAVER Corp., Korea
- 06/12–09/15 Context and Scene Understanding using Multimodal Sensor Information  
 Samsung Electronics, Korea, *\*Served as the project manager*
- 04/15–07/15 Wrong Pose Detection Algorithm for Violin Performance Pose Correction  
 Samsung Electronics, Korea
- 04/12–03/15 Videome: Cognitive Machine Learning from Digital Videos  
 National Research Foundation (NRF), Korea
- 10/14–12/14 EEG Feature Processing for Early Detection of Stroke  
 Samsung Electronics, Korea, *\*Served as the project manager*
- 01/11–04/13 Brain Net: Uncovering the Hyperedges of Cortical Brain Graphs  
 National Research Foundation (NRF), Korea, *\*Served as the project manager*
- 05/11–05/13 Machine Learning for Generating Flexible Motions of Robot Arms  
 National Research Foundation (NRF), Korea
- 05/10–04/11 Super-Realistic Face Modeling using Parameterization of Wound and Scar  
 National Research Foundation (NRF), Korea
- 01/11–03/11 Genome-wide Analysis based on Multiple SNP Loci  
 Centers for Disease Control & Prevention (CDC), Korea
- 04/09–05/10 Live Expression Cloning System with Emotion Extraction from Bio Information for Sensible Entertainment Contents National Research Foundation (NRF), Korea

- 07/08 – 08/09 Deriving Exaggerated Facial Expressions from Motion Data based on Facial features and Personal Styles  
National Research Foundation (NRF), Korea
- 12/08 – 04/09 Customized 3D Face and Expression for PDA devices, Technology Translation Program  
Small & Medium Business Administration (SMBA), Korea

## **TEACHING EXPERIENCES**

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- 2021 Lecturer / Data Analysis & AI Program [\[link\]](#),  
YBM Career Campus
- 2017 Lecturer / Introduction and Practices on Machine Learning,  
Doosan Corporation
- 2017 Lecturer / Tutorials on Machine Learning and Deep Learning,  
School of Computer Science and Engineering, Sungshin University
- 2016 Lecturer / Deep Learning Tutorial (using Caffe) for the 15th Tutorials on Cognitive Technology [\[link\]](#),  
National Association of Cognitive Science Industries (NACSI)
- 2014 Mentor / Academic Counselling Program (Engineering College Part),  
College of Liberal Studies, Seoul National University
- 2014 Mentor / Discrete Mathematics,  
Department of Computer Science and Engineering, Seoul National University
- 2012 TA / Computational Modeling of Intelligence,  
Interdisciplinary Program in Cognitive Science, Seoul National University
- 2011 TA / Brain, Computation, and Neural Learning  
Brain-Cognition-Behavior (BCB) Course, Seoul National University
- 2011 TA / Computational Modeling of Intelligence,  
Interdisciplinary Program in Cognitive Science, Seoul National University
- 2010 TA / Digital Image Processing (Spring semester) / Computer Graphics (Fall semester)  
Division of Multimedia Engineering, Sungkyul University
- 2008 TA / Introduction to Programming,  
Division of Multimedia Engineering, Sungkyul University

## **AWARDS AND HONORS**

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- 2021 The Minister Prize for the Winner of AI Competition, Ministry of Science and ICT, Korea
- 2019 2<sup>nd</sup> Place, RoboCup@Home Domestic Standard Platform League, RoboCup-2019
- 2018 100 Excellent Research Projects of 2018, Ministry of Science and ICT, Korea
- 2017 Winner (1<sup>st</sup> place), RoboCup@Home Social Standard Platform League, RoboCup-2017
- 2010 Chief Director Award, Sungkyul University
- 2009 Grand Prize (1<sup>st</sup>), Venture Competition, Sungkyul University
- 2009 Student Research Grant Award, Digital Venture Pilot, Sungkyul University
- 2009 Effort Award, International Student Design Festival, Asia-Pacific Engineering Education Congress
- 2008 Student Research Grant Award, Digital Venture Pilot, Sungkyul University

## **[Scholarships]**

- 2014 Yoon Songye & Kim Taek-Jin Scholarship, Seoul National University
- 2014 Academic Merit Scholarship, College of Engineering, Seoul National University
- 2009 Academic Merit Scholarships (6 semesters), Sungkyul University
- 2009 Outstanding Student Scholarship, Industry-Academy Cooperation Group, Sungkyul University
- 2008 IT Masters Scholarship, KT Corporation

## **[Conference Awards]**

- 2018 Best Technical Demo Award, AAAI Conference on Artificial Intelligence (AAAI-18)
- 2018 Excellent Student Paper Award (for 2 papers), Korea Software Congress (KSC-2018)
- 2016 Best Paper Award, 2016 Int'l Symposium on Perception, Action, and Cognitive Systems (PACS-2016)
- 2016 Excellent Presentation Award, Korea Computer Congress
- 2016 Best Paper Award, Korea Computer Congress
- 2015 Best Paper Award (for 2 papers), Winter Conference of KIISE
- 2015 Best Paper Award, Korea Computer Congress
- 2015 Excellent Presentation Award, Korea Computer Congress
- 2014 Excellent Presentation Award, Winter Conference of KIISE
- 2014 Excellent Presentation Award, Korea Computer Congress
- 2013 Excellent Presentation Award, Fall Conference of KIISE
- 2013 Excellent Presentation Award, Korea Computer Congress
- 2012 Excellent Presentation Award, Fall Conference of KIISE
- 2010 Excellent Presentation Award, Fall Conference of the Institute of Electronics Engineers of Korea

## **COMPETITION PARTICIPATIONS**

- 06/21 AI Competition 2021, Numerical Analysis Task, Ministry of Science and ICT, Korea (Winner)
- 07/19 RoboCup 2019, RoboCup@Home Domestic Standard Platform League, Sydney, Australia (2<sup>nd</sup> place)
- 10/18 World Robot Summit 2018, Partner Robot Challenge–Real Space, Tokyo, Japan (4<sup>th</sup> Place)
- 06/18 RoboCup 2018, RoboCup@Home Social Standard Platform League, Montreal, Canada (4<sup>th</sup> Place)
- 07/17 RoboCup 2017, RoboCup@Home Social Standard Platform League, Nagoya, Japan (Winner)







## **INVITED TALKS**

- 07/21 “Intelligent Agents in Real Life”, ETRI
- 06/21 “Intelligent Agents in Real Life”, Korea Internet Conference (KRnet-2021)
- 09/20 “Spatial perception”, Surromind Inc.
- 12/19 “Empowering cognitive AI robots with deep learning”, HTW-Berlin
- 06/19 “How to develop a service robot”, Dept. of Biomedical Engineering, Gachon University
- 04/18 “AI & social robotics”, Dept. of Media Software, Sungkyul University
- 01/18 “Cognitive agents that learn everyday life”, Institute for Artificial Intelligence, Uni. Bremen
- 10/14 “AI and machine learning”, Dept. of Multimedia Engineering, Sungkyul University
- 10/14 “Theory and applications of cognitive signal processing”, The 1st Tutorials on Cognitive Technology [\[link\]](#), National Association of Cognitive Science Industries (NACSI)
- 08/14 “Deep learning”, Dept. of Multimedia Engineering, Sungkyul University
- 10/11 “Research trends in multimedia engineering”, Dept. of Multimedia Engineering, Sungkyul University






## JOURNAL PUBLICATIONS

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### [International]

- Sang-Woo Lee, **Chung-Yeon Lee**, Dong-Hyun Kwak, Jung-Woo Ha, Jeonghee Kim, Byoung-Tak Zhang, "Dual-memory neural networks for modeling cognitive activities of humans via wearable sensors," *Neural Networks*, (SCI, IF: 3.216), Vol. 92, pp. 17–28, 2017. 
- Seongah Chin, **Chung-Yeon Lee**, Jaedong Lee, "An automatic method for motion capture-based exaggeration of facial expressions with personality types," *Virtual Reality*, (SCIE, IF: 0.341), Vol. 17, No. 3, pp. 219–237, 2013. 
- Seongah Chin and **Chung-Yeon Lee**, "Personality trait and facial expression filter-based brain-computer interface," *International Journal of Advanced Robotic Systems* (SCIE, IF: 0.375), Vol. 10, 138:2013. 
- **Chung-Yeon Lee**, Sangyong Lee, and Seongah Chin, "Multi-layer structural wound synthesis on 3D face," *Computer Animation and Virtual Worlds (JCAVW)* (SCI, IF: 0.530), Vol. 22, No. 2, pp. 177–185, April 2011. 
- Seongah Chin and **Chung-Yeon Lee**, "Exaggeration of facial expressions from facial motion capture data," *Chinese Optics Letters* (SCIE, IF: 0.967), Vol. 8, No. 1, pp. 29–32, January 2010. 
- **Chung-Yeon Lee** and Seongah Chin, "Facial expression mirroring-based classification of emotions using electroencephalogram signals," *International Journal of Multimedia and Ubiquitous Engineering*, Vol. 8, No. 2, pp.101–110, 2013. 





### [Domestic]

- Beom-Jin Lee, Jin-Young Choi, **Chung-Yeon Lee**, Kyoung-Wha Park, Dasom Baek, Sungjun Choi, Cheolho Han, Dong-Sig Han, Patrick Mokodir Emaase, Byoung-Tak Zhang, "Implementation of deep learning-based integrated cognition framework and behavior mechanism for social service robots," *Journal of Korean Robotics Society*, 14(4), pp. 9–16, October 2017.
- **Chung-Yeon Lee**, Dong Hyun Kwak, Beom-Jin Lee, and Byoung-Tak Zhang, "Event cognition-based daily activity prediction using wearable sensors," *Journal of KIISE*, 43(7), pp. 781–785, July 2016.
- **Chung-Yeon Lee**, Beom-Jin Lee, Kyoung-Woon On, Jung-Woo Ha, Hong-Il Kim and Byoung-Tak Zhang, "Place recognition using ensemble learning of mobile multimodal sensory information," *Journal of KIISE: Computing Practices*, 21(1), pp. 64–69, January 2015. 
- **Chung-Yeon Lee** and Byoung-Tak Zhang, "Analysis on effective EEG connectivity of memory retrieval in the brain," *Journal of KIISE: Computing Practices and Letters*, 20(4), pp. 257–261, April 2014. 
- **Chung-Yeon Lee** and Byoung-Tak Zhang, "Brain-behavior analysis of multimodal episodic memory formation," *Journal of KIISE: Computing Practices and Letters*, 19(12), pp. 703–707, December 2013. 
- **Chung-Yeon Lee**, Beom-Jin Lee, Jung-Woo Ha, and Byoung-Tak Zhang, "Place recognition by learning mobile vision and location data," *Journal of KIISE: Computing Practices and Letters*, 19(5), pp. 288–292, May 2013. 
- **Chung-Yeon Lee**, Jaedong Lee, and Seongah Chin, "Automatic tagging scheme for plural faces," *Journal of The Institute of Electronics Engineers of Korea*, 37-CI(5), pp. 11–21, May 2010. 

## CONFERENCE PROCEEDINGS


















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### [International]


- Youngjae Yoo, **Chung-Yeon Lee** (co-1<sup>st</sup> author), and Byoung-Tak Zhang, "Multimodal Anomaly Detection based on Deep Auto-Encoder for Object Slip Perception of Mobile Manipulation Robots," *Proceedings of International Conference on Robotics and Automation (ICRA-2021, June 2021)* 
- **Chung-Yeon Lee**, Hyundo Lee, Injune Hwang, and Byoung-Tak Zhang, "Visual perception framework for an intelligent mobile robot," *Proceedings of 17<sup>th</sup> International Conference on Ubiquitous Robots and Ambient Intelligence (UR-2020, Kyoto, Japan, June 2020)* 
- Beom-Jin Lee, Jin-Young Choi, Kyoung-Wha Park, **Chung-Yeon Lee**, Sung-Jun Choi, Cheolho Han, Dongsig Han, Christina Baek, Patrick Emaase, and Byoung-Tak Zhang, "Perception-Action-Learning System for Mobile Social-Service Robots using Deep Learning," *Proceedings of the 32<sup>nd</sup> AAI Conference on Artificial Intelligence (AAAI-18, New Orleans, February 2018, Best Technical Demo Awarded)* 
- Sang-Woo Lee, **Chung-Yeon Lee**, Dong Hyun Kwak, Jiwon Kim, Jeonghee Kim, and Byoung-Tak Zhang, "Dual-memory deep learning architectures for lifelong learning of everyday human behaviors," *Proceedings of the 25th International Joint Conference on Artificial Intelligence*, pp. 1669–1675, (IJCAI-16, New York, July 2016) 
- **Chung-Yeon Lee** and Byoung-Tak Zhang, "Effective EEG Connectivity Analysis of Episodic Memory Retrieval," *In P. Bello, M. Guarini, M. McShane, & B. Scassellati (Eds.): Proceedings of the 36th Annual Conference of the Cognitive Science Society, Austin, TX: Cognitive Science Society*, pp. 833–838. (CogSci 2014, Quebec City, July 23~26, 2014)  
- **Chung-Yeon Lee**, Beom-Jin Lee, Joon Shik Kim, and Byoung-Tak Zhang, "Neural correlates of episodic memory formation in audio-visual pairing tasks," *In N. Miyake, D. Peebles, & R. P. Cooper (Eds.): Proceedings of the 34th Annual Conference of the Cognitive Science Society, Austin, TX: Cognitive Science Society*, pp. 1864–1869. (CogSci 2012, Sapporo, August 1~4, 2012)  
- **Chung-Yeon Lee**, Sangyong Lee, and Seongah Chin, "Multi-layer structural wound synthesis on 3D face," *Proc. The 24th International Conference on Computer Animation and Social Agents (CASA 2011)*, Chengdu, China, May 26~28, 2011.  
- **Chung-Yeon Lee** and Seongah Chin, "Interactive wound synthesis on 3D face using inverse projection mapping," *Proc. The International Congress on Computer Applications and Computational Science (CACIS 2010)*, Singapore, December 4~6, 2010. 
- Seongah Chin, **Chung-Yeon Lee**, Jaedong Lee, "Facial expression image mapping for brain computer interface using EI type classification," *Proc. The International Conference on Information Sciences and Interaction Sciences (ICIS 2010)*, Chengdu, China, June 23~25, 2010.  
- Seongah Chin, **Chung-Yeon Lee**, Jaedong Lee, "Personal style and Non-negative matrix factorization based exaggerative expressions of face," *Hamid R. Arabnia, Leonidas Deligiannidis (Eds.): Proceedings of the 2009 International Conference on Computer Graphics & Virtual Reality*, CSREA Press, pp. 91–96. (CGVR 2009, Las Vegas, July 13~16, 2009)  
- Seongah Chin and **Chung-Yeon Lee**, "Leadership and self-propelled behavior based autonomous virtual fish motion," *Proc. International Conference on Convergence and hybrid Information Technology (ICCIT 2008)*, pp. 336–339, Pusan, Korea, November 11~13, 2008.  

## [Domestic]

- Youngjae Yoo, **Chung-Yeon Lee**, and Byoung-Tak Zhang, "Autoencoder-based Multimodal Anomaly Detection for Mobile Manipulation Robots," *Korea Computer Congress 2020 (KCC 2020)*, pp. 482-484, Busan, Korea, July 2020.
- Injune Hwang, **Chung-Yeon Lee**, Hyundo Lee, Byoung-Tak Zhang, "Human recognition and tracking for musing visual feature-based person re-identification model," *Korea Software Congress 2018 (KSC 2018)*, pp. 1958-1960, Pyeongchang, Korea, December 19~21, 2018. (Excellent Student Paper Awarded)
- Hyundo Lee, **Chung-Yeon Lee**, Injune Hwang, Byoung-Tak Zhang, "Object-aware feature augmentation for robust visual SLAM of mobile robots," *Korea Software Congress 2018 (KSC 2018)*, pp. 1883-1885, Pyeongchang, Korea, December 19~21, 2018. (Excellent Student Paper Awarded)
- Sang-Woo Lee, **Chung-Yeon Lee**, Dong Hyun Kwak, Jung-Woo Ha, Jung-Hee Kim, Byoung-Tak Zhang, "Dual Memory Architecture for Daily Life Pattern Learning based on Wearable Sensor," *Annual Conference of Korean Society of Cognitive Science*, May 2017.
- **Chung-Yeon Lee**, Dong-Sig Han, Byoung-Tak Zhang, "Event segmentation by generating descriptions of life-logging image stream," *Proc. Korea Computer Congress 2016 (KCC 2016)*, pp. 856-858, Jeju, Korea, June 29~July 1, 2016. (Excellent Presentation Awarded)  
- Dong-Sig Han, **Chung-Yeon Lee**, Byoung-Tak Zhang, "Temporal dynamic memory networks and data augmentation for question answering optimization," *Proc. Korea Computer Congress 2016 (KCC 2016)*, pp. 818-820, Jeju, Korea, June 29~July 1, 2016. (Excellent Paper Awarded)  
- **Chung-Yeon Lee**, Dong-Hyun Kwak, Beom-Jin Lee, Byoung-Tak Zhang, "Event Cognition-based Daily Activity Prediction from Wearable Sensors," *Proc. The 42th Winter Conference of Korean Institute of Information Scientists and Engineers*, pp. 616-618, December 12~17, 2015. (Best Paper Awarded) 
- Jae-Kyu Oh, **Chung-Yeon Lee**, Byoung-Tak Zhang, "Analyzing multi-sensory data of smartwatch for tipsiness status," *Proc. The 42th Winter Conference of Korean Institute of Information Scientists and Engineers*, pp. 610-612, December 12~17, 2015. (Excellent Paper Awarded) 
- Hanock Kwak, **Chung-Yeon Lee**, Beom-Jin Lee, Byoung-Tak Zhang, "One-shot online learning for joint bayesian model-based face recognition," *Proc. The 42th Winter Conference of Korean Institute of Information Scientists and Engineers*, pp. 657-659, December 12~17, 2015. 
- **Chung-Yeon Lee**, Dong Hyun Kwak, Hanock Kwak and Byoung-Tak Zhang, "Activity recognition by learning auditory-visual lifelogs from wearable sensors," *Proc. Korea Computer Congress 2015 (KCC 2015)*, pp. 921-923, Jeju, Korea, June 24~26, 2015. (Excellent Presentation Awarded) 
- Dong Hyun Kwak, **Chung-Yeon Lee**, Hanock Kwak and Byoung-Tak Zhang, "Wearable lifelog learning using sparse hidden state deep recurrent neural network," *Proc. Korea Computer Congress 2015 (KCC 2015)*, pp. 751-753, Jeju, Korea, June 24~26, 2015. (Best Paper Awarded) 
- **Chung-Yeon Lee**, Sang-Woo Lee, Dong-Hyun Kwak and Byoung-Tak Zhang, "Wearable lifelog-based context awareness and its application scenario," *Proc. The 41th Winter Conference of Korean Institute of Information Scientists and Engineers*, pp. 337-339, Pyeongchang, Korea, December 18~20, 2014. (Excellent Presentation Awarded)  
- Beom-Jin Lee, **Chung-Yeon Lee** and Byoung-Tak Zhang, "RGB-D-T face recognition using convolutional-recursive deep learning," *Proc. The 41th Winter Conference of Korean Institute of Information Scientists and Engineers*, pp. 616-618, Pyeongchang, Korea, December 18~20, 2014. (Excellent Presentation Awarded) 

- **Chung-Yeon Lee**, Byoung-Tak Zhang, "Place recognition using ensemble learning of audio-vision-location integrated information," *Proc. Korea Computer Congress 2014 (KCC 2014)*, pp. 353–355, Pusan, Korea, June 25~27, 2014. (Excellent Presentation Awarded)  
- **Chung-Yeon Lee**, Byoung-Tak Zhang, "Effective EEG connectivity analysis of memory processing in the brain," *Proc. The 40th Fall Conference of Korean Institute of Information Scientists and Engineers*, Vol. 40, pp. 695–697 Jeju, Korea, November 15~16, 2013. (Excellent Presentation Awarded)  
- **Chung-Yeon Lee**, Byoung-Tak Zhang, "Brain-behavior analysis of multimodal episodic memory formation," *Proc. Korea Computer Congress 2013 (KCC 2013)*, pp. 1417–1419, Yeosu, Korea, June 26~28, 2013. (Excellent Presentation Awarded)  
- **Chung-Yeon Lee**, Beom-Jin Lee, Jung-Woo Ha, Byoung-Tak Zhang, "Place recognition by learning mobile vision-location data," *Proc. The 39th Fall Conference of Korean Institute of Information Scientists and Engineers*, Vol. 39, No. 2(B), pp. 247–249, Daejeon, Korea, November 23~24, 2012. (Excellent Presentation Awarded)  
- Joon Shik Kim, Jong-min Lee, **Chung-Yeon Lee**, Byoung-Tak Zhang, "Prediction of cognitive tasks via Hypernetwork sampling of EEG data," *Proc. The 39th Fall Conference of Korean Institute of Information Scientists and Engineers*, Vol. 39, No. 2(B), pp. 168–170, Daejeon, Korea, November 23~24, 2012. 
- Joon Shik Kim, **Chung-Yeon Lee**, Byoung-Tak Zhang, "Particle filter inspired probability prediction model for the sequence of EEG tasks," *Proc. Fall Conference of Korean Institute of Intelligent Systems (KIIS)*, Vol. 22, No. 2, pp. 258–260, Seoul, Korea, November 9~10, 2012. 
- **Chung-Yeon Lee** Beom-Jin Lee, Byoung-Tak Zhang, "Electrooculogram-based scene transition detection for interactive video retrieval," *Proc. Korea Computer Congress 2012 (KCC 2012)*, Vol. 39, No. 1(B), pp. 408–410, Jeju, Korea, June 27~29, 2012. 
- Joon Shik Kim, **Chung-Yeon Lee**, Byoung-Tak Zhang, "Principal component analysis of higher-order hyperedges in EEG data," *Proc. Korea Computer Congress 2012 (KCC 2012)*, Vol. 39, No. 1(B), pp. 414–416, Jeju, Korea, June 27~29, 2012. 
- Joon Shik Kim, **Chung-Yeon Lee**, Minsu Zhang, Kyoung-Tae Kim, Mun-Gon Nam, and Jun-Hee Nam, "Zipf's law and the N-gram analysis of TV drama scripts," *Proc. Spring Conference of Korean Institute of Intelligent Systems (KIIS)*, Vol. 22(1), pp. 217, Mokpo, Korea, April 19~20, 2012. 
- **Chung-Yeon Lee**, Ji-seob Kim, Eun-Sol Kim, Karinne Ramirez Amaro, Michael Beetz, Byoung-Tak Zhang, "Learning and generation of human motion using Boltzmann machines," *Proc. The 38th Fall Conference of Korean Institute of Information Scientists and Engineers*, Vol. 38, No. 2(B), pp. 357–360, Seoul, Korea, October 25~26, 2011.  
- Joon Shik Kim, **Chung-Yeon Lee**, Eun-Sol Kim and Byoung-Tak Zhang, "Characterization of actors in TV drama via complex network measures," *The 38th Fall Conference of Korean Institute of Information Scientists and Engineers*, Vol. 38, No. 2(B), pp. 295–298, Seoul, Korea, October 25~26, 2011. 
- **Chung-Yeon Lee** Eun-Sol Kim, Sangwoo Lee, Bongkyung Ko, Joon Shik Kim, Byoung-Tak Zhang, "Properties of human cognitive learning in a movie scene-dialogue memory game using EEG-based brain function analysis," *Proc. Korea Computer Congress 2011 (KCC 2011)*, Vol. 38, No. 1(B), pp. 210–213, Vol. 38, No. 1(c), pp.210–213, Gyeongju, Korea, June 29~July 1, 2011. 
- Eun-Sol Kim, **Chung-Yeon Lee**, Ki-Seok Kevin Lee, Hyunmin Lee, Joon Shik Kim, Byoung-Tak Zhang, "Searching for spatio-temporal pattern in EEG signal with Hypernetwork," *Proc. Korea Computer*







*Congress 2011 (KCC 2011), Vol. 38, No. 1(C)*, pp. 331-334, Vol. 38, No. 1(c), pp.331–334, Gyeongju, Korea, June 29~July 1, 2011. 

- Joon Shik Kim, Eun-Sol Kim, Byoung-Kwon Lim, **Chung-Yeon Lee**, Byoung-Tak Zhang, "Indian buffet process inspired component analysis for fMRI data," *Proc. Korea Computer Congress 2011 (KCC 2011)*, Vol. 38, No. 1(c), pp.191–194, Gyeongju, Korea, June 29~July 1, 2011. 
- **Chung-Yeon Lee** and Seongah Chin, "Facial soft-tissue depth map using Thin-plate spline," *Proc. The 32th Fall Conference of The Institute of Electronics Engineers of Korea (IEEK)*, pp. 449–450, Seoul, Korea, November 2010.  
- Sangyong Lee, **Chung-Yeon Lee**, and Seongah Chin, "Vivid face in game using BCI," *Proc. The 32th Fall Conference of The Institute of Electronics Engineers of Korea (IEEK)*, pp. 490–491, Seoul, Korea, November 2010. (Excellent Presentation Awarded) 
- **Chung-Yeon Lee** and Seongah Chin, "A selection of EEG electrodes supporting emotion recognition for design of compact BCI," *Proc. The 33th Summer Conference of The Institute of Electronics Engineers of Korea (IEEK)*, pp. 1553–1554, Jeju, Korea, June 2010. 
- **Chung-Yeon Lee**, Jaedong Lee, and Seongah Chin, "Face recognition-based automatic tagging scheme for social network service," *Proc. The 31th Fall Conference of The Institute of Electronics Engineers of Korea (IEEK)*, pp. 369–370, Seoul, Korea, November 2009.  

## **WORKSHOP PAPERS, POSTERS, AND ABSTRACTS**

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- **Chung-Yeon Lee**, Hyundo Lee, Injune Hwang, Byoung-Tak Zhang, "Spatial Perception by Object-Aware Visual Scene Representation," *ICCV 2019 Workshop on Deep Learning for Visual SLAM*, Seoul, Korea, November 2, 2019. 
- **Chung-Yeon Lee**, Hyundo Lee, Injune Hwang, Byoung-Tak Zhang, "Visual perception framework for human-care service robots," *HRI 2019 Workshop on Social Human-Robot Interaction of Human-care Service Robots*, EXCO, Daegu, Korea, March 11~14, 2019.
- **Chung-Yeon Lee**, Jung-Woo Ha, Beom-Jin Lee, Woo-Sung Kang and Byoung-Tak Zhang, "Place awareness learned by mobile vision-GPS sensor data," *NIPS 2012 Workshop on Machine Learning Approaches to Mobile Context Awareness*, Lake Tahoe, NV, USA, December 3~8, 2012.  
- **Chung-Yeon Lee**, Beom-Jin Lee, Joon Shik Kim, and Byoung-Tak Zhang, "EEG correlates of multimodal episodic memory formation," *The 12th China-Japan-Korea Joint Workshop on Neurobiology and Neuroinformatics (NBNI 2012)*, Seoul, Korea, November 21~23, 2012.
- Joon Shik Kim, Jong Min Lee, **Chung-Yeon Lee**, Beom-Jin Lee, and Byoung-Tak Zhang, "Prediction of Cognitive Tasks via Hypernetwork Sampling of EEG Data," *The 12th China-Japan-Korea Joint Workshop on Neurobiology and Neuroinformatics (NBNI 2012)*, Seoul, Korea, November 21~23, 2012.
- **Chung-Yeon Lee**, Beom-Jin Lee, and Byoung-Tak Zhang, "EEG analysis on story change in TV drama," *Proc. The 8th Asian-Pacific Conference on Vision (APCV 2012)*, p54, Incheon, Korea, July 13~15, 2012. 
- Joon Shik Kim, **Chung-Yeon Lee**, Minsu Zhang, Jun-Hee Nam, "Complex Network Analysis of Social Relationships and Personality from TV Drama Dialogues," *The 34th Annual Conference of the Cognitive Science Society (CogSci 2012)*, Sapporo, August 1~4, 2012.

- **Chung-Yeon Lee**, Beom-Jin Lee, Joon Shik Kim, Byoung-Tak Zhang, "A study on frontal oscillation during memory retrieval tasks via video stimuli," *Proc. Symposium on Brain and Artificial Intelligence*, p. 317, Muju, Korea, January 31~February 1, 2012.
- Joon Shik Kim, **Chung-Yeon Lee**, Byoung-Tak Zhang, "Inference of EEG task based on k-NN and generative model," *Proc. Symposium on Brain and Artificial Intelligence*, p. 319, Muju, Korea, January 31~February 1, 2012.
- **Chung-Yeon Lee**, Eun-Sol Kim, Joon Shik Kim and Byoung-Tak Zhang, "Interaction of language and vision memories in TV drama watching: an EEG study," *The 4th Embodied & Situated Language Processing (ESLP 2011)*, Bielefeld, Germany, August 25~27, 2011.
- **Chung-Yeon Lee**, Dong-Sig Han, Byoung-Tak Zhang, "Automatic event segmentation based on descriptions generated from life-logging image stream," *Proc.2016 Annual Conference of the Korean Society for Cognitive Science*, Seoul, Korea, May 28, 2016.

## **INTELLECTUAL PROPERTIES**

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- 2020 Method of multimodal sensor-based anomaly detection for object slip detection of mobile manipulation robots, Korean Intellectual Property Office (PCT/KR2021/004701; 10-2020-0128103)
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