HYUNWOO CHO

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Address : Room 655, 7 bldg., Electronics and Telecommunications Research Institute, Daejeon, Republic of Korea
Personal webpage : https://hwoocho.github.io/online-cv/
Citations : https://scholar.google.co.kr/citations?user=6WDQQrAAAAAJ&hl=en

RESEARCH INTERESTS

Augmented Reality / Virtual Reality
Human-Computer Interaction (Natural User Interface, Interaction Design)
Computer Vision (SLAM / 3D Reconstruction / Segmentation / Feature Descriptor)

EDUCATION

Korea Advanced Institute of Science and Technology (KAIST)
M.S., Computer Science 2012
Research Topic: Augmented reality-based content authoring interface (HCI, AR/VR)   **2010-2012**
Thesis: "Efficient 3D content authoring framework based on mobile AR"
Advisor: Hyun S. Yang

Kyungpook National University (KNU)
B.S., Electrical Engineering and Computer Science 2010   **2006-2010**

CAREER

Electronics and Telecommunications Research Institute (ETRI)
Researcher, Creative Content Research Division SW·Content Research Laboratory   **2012-Now**

Research Project (2018-Now): Development of participational AR platform for large-scale cultural space
- Researches of a feature based SLAM for AR tracking
- Researches of HCI Issues in Augmented Reality

Research Project (2014-2017): Development of personalized and creative learning tutoring system based on participational interactive contents and collaborative learning technology
- Researches and developments of an AR based real-time broadcasting system
- Researches and developments on an 3D AR education system for children
- **Technology transfer of the AR broadcasting system and the 3D AR education system (11 companies, about 450,000 USD)**

Research Project (2012-2013): Development of learner-participational and interactive 3D Virtual learning contents technology
- Developments on a mobile AR platform
- Researches of AR contents authoring and a planar target recognition and tracking
- **Technology transfer of the mobile AR platform (6 companies, about 160,000 USD)**

TECHNICAL SKILLS

Programming Language: C, C++, C#, Java, Objective C, Python
Mobile Programming: iOS, Android
Libraries and Tools: OpenCV, PCL, TensorFlow
Graphics Engine: Unity3D, OpenGL

PUBLICATIONS

International Conferences

ARStudio: AR Broadcasting System based on Multiple RGB-D Cameras
Hyunwoo Cho, Sung-Uk Jung, Suwon Lee, Young-Suk Yoon, Sangheon Park, Hyung-Keun Jee
International Conference on ICT Convergence (ICTC 2018)   **2018**

Real-time interactive AR system for broadcasting
Hyunwoo Cho, Sung-Uk Jung, Hyung-Keun Jee
IEEE Virtual Reality (VR2018)   **2017**

An AR-based safety training assistant in disaster for children
Sung-Uk Jung, **Hyunwoo Cho,** Hyung-Keun Jee
SIGGRAPH ASIA 2016   **2016**

Efficient 3D content authoring framework based on mobile AR
Sang-Wook Lee, Jinki Jung, Jihye Hong, Suwon Lee, **Hyunwoo Cho,** Hyun S Yang
Virtual Systems and Multimedia (VSMM2012)   **2012**

AR postcard: the augmented reality system with a postcard
Hyunwoo Cho, Jinki Jung, Kyusung Cho, Yong-Ho Seo, Hyun S Yang
ACM SIGGRAPH International Conference on Virtual Reality Continuum and Its Applications in
Industry (VRCAI2011)   **2011**

An interactive bulletin board with mobile devices
Hyunwoo Cho, Kyusung Cho, Hyun S Yang
ACM SIGGRAPH International Conference on Virtual Reality Continuum and Its Applications in
Industry (VRCAI2010)   **2010**

Domestic Journals

E-Learning Technology Trends
J.A. Noh, S.J. Lee, J.H. Yun, **H.W. Cho,** S.B. Kang
2014 Electronics and Telecommunications Trends   **2014**

PATENTS

System and method for diagnosis mass attributes of leaner
Korea Patent Pending, 2016-0161793, Co-inventor   **2016**

Augmented reality system linked to smart device
Korea Patent Pending, 2016-0157521, Co-inventor   **2016**

Contents authoring tool for augmented reality based on space and thereof method
Korea Patent Pending, 2016-0105517, Co-inventor   **2016**

*PROVIDING APPARATUS FOR AUGMENTED REALITY SERVICE, DISPLAY APPARATUS AND PROVIDING SYSTEM
FOR AUGMENTED REALITY SERVICE COMPRISING THEREOF*
Korea Patent Pending, 2016-0000284, Co-inventor   **2015**

Augmented Reality device based on recognition spatial structure and method thereof
US Patent, 9892323, Co-inventor   **2015**

Apparatus and method for object recognition with convolution neural network
Korea Patent Pending, 2015-0125393, Co-inventor   **2015**

Apparatus and method for extracting person domain based on RGB-Depth image
Korea Patent Pending, 2015-0125417, Co-inventor   **2015**

AUGMENTED REALITY-BASED HAND INTERACTION APPARATUS AND METHOD USING IMAGE INFORMATION
US Patent, 9881423, Co-inventor   **2014**

Apparatus and method for implementing immersive augmented reality with RGB-D data
Korea Patent Pending, 2014-0125198, Co-inventor   **2014**

Sub-region based recognition method for an augmented reality under cluttered background
Korea Patent, 1694309, Co-inventor   **2013**

Freehand pointing processing apparatus using body information
Korea Patent, 1849414, Co-inventor   **2012**

RESEARCH EXPERIENCES

Development of participational AR platform for large-scale cultural space **Researcher** Developed a multi-user based collaborative map optimization using feature based SLAM.	**March 2018 - Now**
ARStudio: Real-time Interactive AR System for Broadcasting **Project manager, Researcher** Proposed an AR based real-time broadcasting system which perceives the indoor space using calibrated camera for broadcasting and RGB-D cameras.	**March 2014 – October 2017**
Performance upgrade for Makerless mobile AR platform **Project manager, System engineer** Developed a self-contained mobile augmented reality system for over 1,000 planar targets using a binary descriptor.	**March 2015 – December 2016**
Indoor 3D AR System for Education **Researcher** Developed an AR based education system which recognizes the real space based on RGB-D, augments the virtual objects and interacts between the objects and users in real space.	**March 2014 – March 2016**
Makerless mobile AR platform **Researcher, System engineer** Developed a mobile AR platform composed of an AR contents authoring tool and a real-time recognition engine based on random forest.	**March 2012 – March 2014**
Efficient 3D content authoring framework based on mobile AR **Project manager, Researcher** Proposed a novel interaction design for 3D content authoring based on an augmented reality technique.	**August 2011 – December 2011**
AR Postcard: An augmented reality system with a postcard **Project manager, Researcher** Proposed a postcard system which recognizes a card using a camera within a device (PC/Smart TV/Tablet PC) and augments the video of the sender fit to the card size.	**March 2011 – June 2011**
Interactive bulletin board **Project manager, Researcher** Proposed a new interaction method for interchanging information between a public screen and a mobile device.	**March 2010 – August 2010**

TEACHING EXPERIENCES

Korea Advanced Institute of Science and Technology (KAIST) **Teaching Assistant-Computer Science 101 (Introduction to programming)**	**2010 Fall – 2011 Fall**

AWARDS

Top 100 national R&D award from Korean government (Ministry of Science and ICT)	**2016**
Outstanding technology commercialization award from ETRI	**2014**

LEADERSHIP SKILLS

Scout Leader of Korea Scout Association (Guide for Youth)	**2006-2009**
Chairman of KERT, Academic Club of EECS KNU	**2008**

LANGUAGES

English – speak fluently and read/write with high proficiency
Korean – native language