Youngkyoon Jang Postdoctoral Research Assistant

Multimedia and Vision (MMV) Research Group (E153)
School of Electronic Engineering and Computer Science (EECS)
Queen Mary University of London
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Citizenship S. Korea
Language Korean (native) and English (fluent)

RESEARCH INTERESTS

I develop novel natural user interface technologies that aim to make interactions between humans and computers more intuitive in a wearable AR/VR environment. These efforts often lie in **understanding human behaviours**, understanding scene and identifying persons based on **gesture interaction**, mobile & wearable computing, and visual computing. Besides my research background in computer science, my work often incorporates aspects of **machine learning** (particularly **Deep Learning, Random Forest**), **augmented reality & virtual reality**, computer vision, video processing (including IR, colour, and depth images), and biometrics. Topics include **face/emotion detection, hand gesture recognition, AR/VR object selection & manipulation**, object recognition in a video, and person re-identification (via iris, finger vein, and face images).

EDUCATION

KAIST 02/2012 - 08/2015
Ph.D. in Graduate School of Culture Technology (GSCT) *Daejeon, S. Korea*

· Thesis: Context-driven Spatio-temporal Classifier for Articulated Hand Gesture Recognition
· Advisor: Prof. Woontack Woo
· Co-examiners: Prof. In So Kweon, Prof. Jeounghoon Kim, Prof. Se-Bum Paik, and Prof. Sung-Hee Lee

Gwangju Institute of Science and Technology (GIST) 09/2008 - 02/2012
Coursework Completion in Information and Communication Engineering *Gwangju, S. Korea*

· I finished the coursework of Master and Ph.D. programs and transferred to KAIST
· Advisor: Prof. Woontack Woo

Sangmyung University (SMU) 03/2007 - 06/2008
Coursework Completion in Computer Science *Seoul, S. Korea*

· I finished the coursework of Master program
· Advisor: Prof. Kang Ryoung Park

Sangmyung University (SMU) 03/2003 - 02/2007
B.S. in Computer Science *Seoul, S. Korea*

· Graduated with honors (3rd ranked graduate)

PROFESSIONAL EXPERIENCE

Queen Mary University of London 06/2016 - present
Postdoc Researcher, School of EECS, Advisor: Prof. Ioannis Patras *London, UK*

· **Contributing a research project** related to automatic computer vision based analysis of human behaviour (affect) in retail environments.

University of Cambridge 07/2016 - present
Visiting Researcher, Computer Laboratory, Advisor: Prof. Hatice Gunes *Cambridge, UK*

· I have been visiting Cambridge regularly (e.g. once a month) for conducting collaborative project related to human behaviour analysis in affective computing domain.

KAIST 08/2015 - 04/2016
Postdoc Researcher, Augmented Human Research Center, CTRI, Advisor: Prof. W.Woo *Daejeon, S. Korea*

· **Managing a research project** related to facial landmark detection/tracking robust to head rotation and partial occlusions and high-quality augmentation.
· Finalising research paper for hand-gesture-based novel Natural User Interface (NUI).

KAIST 02/2012 - 08/2015
Research Assistant, UVR Lab., Advisor: Prof. W.Woo *Daejeon, S. Korea*

· Investigated hand gesture input mechanisms for wearable AR/VR computing.
· **Wrote a research grant proposal** for "Highly Realistic and Human-centric VR Technology Development (for face, body and hair)" (especially, face part).

Imperial College London (ICL) 2011, 2014, 2015
Visiting Researcher, Imperial Computer Vision & Learning Lab., Advisor: Prof. T-K. Kim *London, UK*

· Studied 3D static and dynamic hand gesture estimation as a novel NUI. 10/2014 - 01/2015
· Studied 3D finger clicking action and position estimation in a wearable AR/VR. 01 - 02/2014
· Studied multiple 3D objects recognition in a video. 09 - 11/2011

GIST 06/2008 - 01/2012
Research Assistant/Intern, U-VR Lab., Advisor: Prof. W. Woo *Gwangju, S. Korea*

· RA, Investigated 3D object recognition in a video and user interfaces on a mobile device. 09/2008 - 01/2012
· RI, Investigated smile training system on a mobile device. 06 - 08/2008

Sangmyung University (SMU) 03/2007 - 06/2008
Research Assistant, Computer Graphics & Computer Vision Lab., Advisor: Prof. K. R. Park *Seoul, S. Korea*

· Investigated eyelid localisation for improving iris recognition accuracies and touchless finger vein recognition.

PUBLICATION

International Journal (SCI/SCIE)

IJ.04 **Youngkyoon Jang**, Ikbeom Jeon, Tae-Kyun Kim, Woontack Woo, *Metaphoric Hand Gestures for Orientation-aware VR Object Manipulation with an Egocentric Viewpoint*, IEEE Transactions on Human-Machine Systems (**THMS**), vol. 47, no. 01, pp. 113-127, Feb. 2017.

IJ.03 **Youngkyoon Jang**, Seung-Tak Noh, Hyung Jin Chang, Tae-Kyun Kim, and Woontack Woo, *3D Finger CAPE: Clicking Action and Position Estimation under Self-Occlusions in Egocentric Viewpoint*, IEEE Transactions on Visualization and Computer Graphics (**TVCG**), vol. 21, no. 4, April 2015.

IJ.02 **Youngkyoon Jang**, Byung Jun Kang, and Kang Ryoung Park, *A Novel Portable Iris Recognition System and Usability Evaluation*, International Journal of Control, Automation, and Systems, vol.8, no.1, pp.91-98, February 2010.

IJ.01 **Youngkyoon Jang**, Byung Jun Kang, and Kang Ryoung Park, *A Study on Eyelid Localization Considering Image Focus for Iris Recognition*, Pattern Recognition Letters (**PRL**), Vol. 29, Issue 11, pp. 1698-1704, 1 August 2008.

International Conference

IC.15 **Youngkyoon Jang**, Hatice Gunes, Ioannis Patras, *SmileNet: Registration-free Smiling Face Detection In The Wild*, 7th IEEE Workshop on Analysis and Modeling of Faces and Gestures (In conjunction with **ICCV** 2017), Venice, Italy, Oct. 28, 2017.

IC.14 **Youngkyoon Jang**, Eunah Jung, Sung Sil Kim, Jeongmin Yu, Woontack Woo, *User-Independent Face Landmark Detection and Tracking for Spatial AR Interaction*, Proceedings of the 18th International Conference on Human-Computer Interaction, pp. 210-220, Jul, 2016.

IC.13 **Youngkyoon Jang**, Ikbeom Jeon, Tae-Kyun Kim, Woontack Woo, *Multi-Layered Random Forest-based Metaphoric Hand Gesture Interface in VR*, 2nd IEEE Workshop on Observing and Understanding Hands in Action (In conjunction with **CVPR** 2016), Extended Abstract (poster), Las Vegas, NV, USA, Jul, 2016. **(Best Poster Award)**

IC.12 Jeongmin Yu, Seungtak Noh, **Youngkyoon Jang**, Gabyong Park, Woontack Woo, *A Hand-based Collaboration Framework in Egocentric Coexistence Reality*, The 12th International Conference on Ubiquitous Robots and Ambient Intelligence (URAI), pp. 545-548, KINTEX, Goyang, S. Korea, Oct. 28-30, 2015.

IC.11 **Youngkyoon Jang**, Seung-Tak Noh, Hyung Jin Chang, Tae-Kyun Kim, and Woontack Woo, *3D Finger CAPE: Clicking Action and Position Estimation under Self-Occlusions in Egocentric Viewpoint*, **IEEE VR** 2015, Arles, Camargue, Provence, France, Mar. 23-27, 2015. (**long paper, accept rate=13.8% (13/94)**, also to appear in IEEE Trans. on Visualization and Computer Graphics)

IC.10 Yang Liu*, **Youngkyoon Jang***, Woontack Woo, and Tae-Kyun Kim, *Video-based Object Recognition using Novel Set-of-Sets Representations*, 3rd IEEE Workshop on Egocentric (First-person) Vision (In conjunction with **CVPR** 2014), pp.519-526, Columbus, Ohio, USA, Jun. 2014. (* indicates equal contribution)

IC.09 Jooyeun Ham, Jonggi Hong, **Youngkyoon Jang**, Seung Hwan Ko, and Woontack Woo, *Smart Wristband: Touch-and-motion-tracking Wearable 3D Input Device for Smart Glasses*, HCII 2014, Heraklion, Crete, Greece, Jun. 22-27, 2014. **(Best Paper Award)**

IC.08 Jooyeun Ham, Jonggi Hong, **Youngkyoon Jang**, Seung Hwan Ko, and Woontack Woo, *Smart Glasses: Wearable Input Device Based on Wristband-type Motion-aware Touch Panel*, IEEE 3DUI 2014 (poster), Minneapolis, USA, Mar. 29-30, 2014.

IC.07 **Youngkyoon Jang**, and Woontack Woo, *Unified Visual Perception Model for Context-aware Augmented Reality*, **ISMAR** 2013, Doctoral Consortium program (officially, poster), Adelaide, S.A, Australia, Oct. 1-4, 2013.

IC.06 **Youngkyoon Jang**, and Woontack Woo, *Local Feature Descriptors for 3D Object Recognition in Ubiquitous Virtual Reality*, International Symposium on Ubiquitous Virtual Reality 2012, pp. 42-45, Daejeon, S. Korea, Aug. 22-25, 2012.

IC.05 **Youngkyoon Jang**, and Woontack Woo, *A Stroke-based Semi-automatic ROI Detection Algorithm for In-Situ Painting Recognition*, HCII2011 (Virtual and Mixed Reality, Part II), LNCS 6774, pp. 167-176, Orlando, Florida, USA, July 9-14, 2011 (LNCS).

IC.04 Ahyoung Choi, Youngmin park, **Youngkyoon Jang**, Changgu Kang, and Woontack Woo, *mARGraphy: Mobile AR-based Dynamic Information Visualization*, 9th International Symposium on Ubiquitous Virtual Reality 2011, pp. 37-39, Jeju, S. Korea, July 1-4, 2011.

IC.03 Hyoseok Yoon, Nohyoung Park, Wonwoo Lee, **Youngkyoon Jang**, and Woontack Woo, *QR Code Data Representation for Mobile Augmented Reality*, AR Standards Meeting 2011, pp. 000-000, 2011.

IC.02 Choonsung Shin, Hyejin Kim, Changgu Kang, **Youngkyoon Jang**, Ahyoung Choi, and Woontack Woo, *Unified Context-aware Augmented Application Framework for Supporting User-Driven Mobile Tour Guide*, 8th International Symposium on Ubiquitous Virtual Reality 2010, pp. 52-55, Gwangju, S. Korea, July 7-10, 2010.

IC.01 **Youngkyoon Jang**, and Woontack Woo, *Adaptive Lip Feature Point Detection Algorithm for Real-time Computer Vision-based Smile Training System*, The 4th International Conference on E-Learning and Games (Edutainment 2009), LNCS 5670, pp. 379-389, Banff, Canada, August 9-11, 2009 (LNCS).

Domestic Journal (in Korean)

DJ.06 Seung-Tak Noh, Taejin Ha, **Youngkyoon Jang**, Gabyong Park, and Woontack Woo, *Present and Future of Contactless Hand Posture Estimation Techniques for Wearable AR-based Interaction*, Journal of The Korean Society of Broadcast Engineers (KSBE), vol. 19, no. 3, pp. 88-102, 2014.

DJ.05 **Youngkyoon Jang**, Ju-Whan Kim, Seung geon Moon, Tek-Jin Nam, Dong soo Kwon, and Woontack Woo, *Complementary Feature-point-based Descriptors for 3D Object Recognition*, Journal of KIISE:Software and Applications, vol. 39, no. 11, pp. 848-853, Nov. 2012. **(Best Paper on KCC 2012)**

DJ.04 **Youngkyoon Jang**, and Woontack Woo, *Hough Transform-based Semi-automatic Vertex Detection Algorithm on a Touch Screen Mobile Phone*, Journal of KIISE: Computing Practices and Letter, vol. 16, no. 5, pp. 596-600, May. 2010. **(Excellent Paper on the 36th Autumn Conference)**

DJ.03 **Youngkyoon Jang**, Woontack Woo, Dongchul Kim and Choonsung Shin, *Mobile Augmented Reality Technology Trends*, Open Standards and Internet Association Standards & Technology Review (Special Issue for Mobile Internet), vol. 38, no. 1, pp. 41-52, Mar. 2010.

DJ.02 **Youngkyoon Jang**, Byung Jun Kang, and Kang Ryoung Park, *A Study on Touchless Finger Vein Recognition Robust to the Alignment and Rotation of Finger*, Journal of Information Processing Society (B), vol. 15-B, no. 4, pp. 275-284, Aug. 2008.

DJ.01 **Youngkyoon Jang**, Byung Jun Kang, and Kang Ryoung Park, *Eyelid Detection Algorithm Based on Parabolic Hough Transform for Iris Recognition*, Journal of IEEK, vol. 44, no. 01, pp. 94-104, Jan. 2007.

Domestic Conference (in Korean)

DC.07 Sungsil Kim, Jeong-Hun Jo, **Youngkyoon Jang**, and Woontack Woo, *Mobile Face Recognition Lock Screen Designed for Quantified Self and Self-Reflection Feedback*, KIISE, Dec. 18-20, 2014, Phoenix Park.

DC.06 **Youngkyoon Jang**, Seungtak Noh, and Woontack Woo, *RGB-D image-based touch points detection for hand-plane interaction*, HCI Korea, Feb. 12-14, 2014, High1 Resort.

DC.05 **Youngkyoon Jang**, and Woontack Woo, *RGB-D image-based multiple objects localization and recognition*, HCI Korea, Jan. 30-Feb.01, 2013, High1 Resort.

DC.04 **Youngkyoon Jang**, Ju-Whan Kim, Seung geon Moon, Tek-Jin Nam, Dong soo Kwon, and Woontack Woo, *Object Recognition utilizing Complementary Feature-point-based descriptor containing color information*, Korea Computer Congress (KCC), Jun. 27-29, 2012, Jeju Phoenix Island Hotel.

DC.03 Nohyoung Park, **Youngkyoon Jang**, and Woontack Woo, *RGB-D image feature point extraction and description method for 3D object recognition*, Korea Computer Congress (KCC), Jun. 27-29, 2012, Jeju Phoenix Island Hotel.

DC.02 **Youngkyoon Jang**, and Woontack Woo, *Hough Transform-Based Semi-Automatic Vertex Detection Algorithm for Object Modeling on a Touch Screen Mobile Phone*, The 36th Autumn Conference (KIISE), Nov. 27-28, 2009, Ehwa Womans University.

DC.01 **Youngkyoon Jang**, Byung Jun Kang, and Kang Ryoung Park, *A Study on Mobile Iris Recognition System*, The 20th Workshop on Image Processing and Image Understanding (IPIU 2008), Fab. 20-22, 2008, Jeju Grand Hotel. **(Invited Tutorial)**

ETC (poster, workshop, demo)

Etc.04 **Youngkyoon Jang**, Ikbeom Jeon, Tae-Kyun Kim, and Woontack Woo, *Symbolic Hand Gesture Interface in Wearable AR*, APMR 2016, Andong, S. Korea, Apr. 22-24, 2016. **(Best Presentation Award)**

Etc.03 **Youngkyoon Jang**, Ikbeom Jeon, Hyung-Il Kim, Hui Shyong Yeo, Tae-Kyun Kim, and Woontack Woo, *Static-Dynamic Gesture based AR Interaction and Applications*, KJMR 2015, Daiichi Takimoto, Hokkaido, Japan, Apr. 24-26, 2015.

Etc.02 **Youngkyoon Jang**, Hyung Jin Chang, Tae-Kyun Kim, and Woontack Woo, *Unified Visual Perception Model and Its Application*, KJMR 2014, Jeonju, S. Korea, Apr. 18-20, 2014.

Etc.01 **Youngkyoon Jang**, Byung Jun Kang, and Kang Ryoung Park, *A Study on Eyelid Detection for Iris Recognition*, The 5th BERC Biometrics Workshop, Feb. 1-2, 2007, Yonsei University. (in Korean)

PATENTS

KOR (Registered)

DR.09 Portable Facial Expression Training System and Methods thereof, #: 101510798, date (03/04/2015), inventor (**Youngkyoon Jang**, W. Woo, A. Choi), applicant (GIST)

DR.08 RGB-D image-based multiple objects localization and recognition, #: 101486543, date (20/01/2015), inventor (**Youngkyoon Jang**, W. Woo), applicant (KAIST)

DR.07 RGB-D Image based feature point description and matching method for 3D object detection, #: 101478709, date (26/12/2014), inventor (W. Woo, N. Park, **Youngkyoon Jang**), applicant (KAIST)

DR.06 Local feature descriptors utilizing local shape of features for 3D object recognition, #: 101442042, date (12/09/2014), inventor (W. Woo, **Youngkyoon Jang**), applicant (KAIST)

DR.05 Object Recognition utilizing Complementary Feature-point-based descriptor containing color information, #: 101374726, date (10/03/2014), inventor (**Youngkyoon Jang**, J.Kim, S. Moon, T. Nam, D. Kwon, W. Woo), applicant (KAIST)

DR.04 Interesting area detecting apparatus, method, and recording medium thereof capable of improving recognition efficiency in a side detection attempt, #: 101272448, date (31/05/2013), inventor (**Youngkyoon Jang**, W. Woo), applicant (GIST)

DR.03 Apparatus and method for detecting a vertex on the screen of a mobile terminal, #: 10-1032446, date (25/04/2011), inventor (**Youngkyoon Jang**, W. Woo), applicant (GIST)

DR.02 Method for Personal Identification Using Finger-veins, #: 10-0954776, date (19/04/2010), inventor (B. Kang, **Youngkyoon Jang**, H. Lee, K. Park), applicant (Sangmyung Univ.)

DR.01 The eyelid detection and eyelash interpolation method for the performance enhancement of iris recognition, #: 10-0794361-00-00, date (07/01/2008), inventor (B. Kang, **Youngkyoon Jang**, K. Park, J. Kim), applicant (Yonsei Univ.)

KOR (Pending)

DP.06 Metaphoric Hand Gestures for Orientation-aware VR Object Manipulation, #: 10-2016-0037120, date (28/03/2016), inventor (**Youngkyoon Jang**, I. Jeon, T-K. Kim, W. Woo), applicant (KAIST)

DP.05 Click detecting apparatus and method for detecting click in first person viewpoint, #: 10-2016-0004289, date (13/01/2016), inventor (**Youngkyoon Jang**, S-T. Noh, H. J. Chang, T-K. Kim, W. Woo), applicant (KAIST)

DP.04 A recommendation system using laugher information accumulated by mobile expression-recognition device, #: 10-2015-0046990, date (02/04/2015), inventor (W. Woo, J. Jo, S. Kim, **Youngkyoon Jang**), applicant (KAIST)

DP.03 QR code data representation for mobile augmented reality, #: 2010-0119208, date (26/11/2010), inventor (W. Woo, H. Yoon, N. Park, W. Lee, **Youngkyoon Jang**), applicant (GIST)

DP.02 Capturing device for touchless finger-vein image, #: 10-2008-0005747, date (18/01/2008), inventor (K. Park, B. Kang, **Youngkyoon Jang**, E. Lee, D. Jeong), applicant (Sangmyung Univ.)

DP.01 The feature extraction method for finger vein recognition, #: 10-2007-0132446, date (17/12/2007), inventor (B. Kang, **Youngkyoon Jang**, E. Lee, D. Jeong, H. Lee, K. Park), applicant (Sangmyung Univ.)

AWARDS & HONORS

CVPRW 2016	Best Poster Award (IC.13) IEEE CVPR16 Workshop on HANDS, sponsored by Facebook/Oculus and Purdue Univ.	07/2016
APMR 2016	Best Presentation Award (ETC.04) Asia-Pacific Workshop on Mixed Reality 2016	04/2016
HCII 2014	Best Paper Award (IC.09) International Conference on Distributed, Ambient and Pervasive Interactions	06/2014
KCC 2012	Best Paper Award (DC.04) Korea Computer Congress (KCC) 2012	06/2012
KCC 2012	Best Presentation Award (DC.03) Korea Computer Congress (KCC) 2012	06/2012
KIISE 2009	Best Paper Award (DC.02) The 36th Autumn Conference, Korean Institute of Inf. Sci. & Eng. (KIISE)	11/2009
SK Telecom co.	Creative Challenge Award 2013 (Smart Wristband, AirSculpt) Creative Challenge for Designing Novel Wearable User Interface	02/2014
ISUVR 2012	The 1st Prize Design Challenge Activity (Topic: Fun in AR Glasses)	08/2012

Ministry of Culture, Sports and Tourism (MCST) Sponsored Student, KAIST
Full Scholarship 02/2012 - 08/2015

Government Sponsored Student, GIST
Full Scholarship 09/2008 - 01/2012

Department of Information and Communication (DIC), GIST
DASAN Scholarship - 1st DIC Research Excellent Scholarship Student 09/2010

Korea Science and Engineering Foundation (KOSEF), Korea Student Aid Foundation (KOSAF)
Science and Engineering Graduate Research Scholarship Student 09/2007 - 08/2008

Sangmyung University Scholarship
Merit-based scholarship for 6 semesters 09/2003 - 08/2006

TEACHING EXPERIENCE

Teaching Assistant
GCT555: 3D Interaction Design, Graduate School of Culture Technology, KAIST. 09 - 12/2013
GCT654: Visual Computing, Graduate School of Culture Technology, KAIST. 02 - 05/2012
Human-Computer Interaction, Digital Image Processing, etc., Undergraduate, SMU. 03/2007 - 06/2008

Research Mentoring (PG: postgraduate, UG: undergraduate)
Ikbeom Jeon, KAIST PG, M.S. Student of UVR Lab. [Static Hand Gesture Recognition] 08/2015 - 04/2016
Jaihee Kim, KAIST UG, Research Intern of AHRC [Refinement of Random Forests] 12/2015 - 02/2016
Seunghyo Kang, KAIST UG, Research Intern of AHRC [Facial Landmark Detection] 12/2015 - 02/2016
Eunah Jung, KAIST UG, Research Intern of AHRC [Facial Landmark Detection] 08/2015 - 11/2015
Sungsil Kim, KAIST UG, Research Intern of AHRC [Head Pose Estimation] 07/2015 - 11/2015
Sungsil Kim, KAIST UG, Undergraduate Research Program (URP). [Face Recog. for QS] 12/2014 - 06/2015
Junsoo Park, KAIST UG, URP. [UI Design for Quantified-Self (QS)] 12/2014 - 06/2015

Sungsil Kim, KAIST UG, Research Intern of UVR Lab. [Smiley Face Recognition] 06/2014 - 12/2014

Undergraduate Tutoring

Tutor of Tutoring Program (C/C++ Programming), Sangmyung Univ. 08 - 12/2005
Teaching Assistant of Jeju Embedded Camp (Embedded Programming), Sangmyung Univ. 01 - 02/2005

RESEARCH PROJECT EXPERIENCE

Sensing Feeling 06/2016 - present
Innovate UK

· As a member of the project, studying and developing advanced automated human emotion-sensing techniques including deep learning-based real-time face detection and affect recognition in videos.

Highly Realistic and Human-centric VR Technology Development 06/2015 - 04/2016
Funded by an International Company (requested for confidential treatment)

· As a (face) team leader of the project, **helped to write a grant proposal and independently managing the team** for developing facial landmark detection/tracking algorithms, which are robust to head rotation and partial occlusions.

Global Frontier R&D on <Human-centered Interaction for Coexistence> 12/2011 - 04/2016
Ministry of Education and Science Technology (MEST), National Research Foundation (NRF) of Korea

· As a member of the project, studying unified visual perception model, which imitates the human visual perception process, for the stable object recognition necessarily required for augmented reality in the field as well as spatio-temporal classifier for articulated hand gesture estimation in egocentric view.

Facial Expression Recognition for Mining Emotion 06/2014 - 05/2015
KAIST

· As a mentor of the project, managed the team and give guidance how to improve the motivation of making a smiley face by taking intended inconvenient interactions.

Development of Experience Tour Technology based on Mobile Mixed Reality 03/2009 - 01/2012
Korea Creative Content Agency (KOCCA) of Ministry of Culture, Sports and Tourism (MCST)

· As a member of the project, studied how to improve the recognition rate over time by selecting a representative code and regenerating the code. Moreover, developed semi-automatic region of interest (ROI) detection and recognition for user-participated mobile mixed reality.

Mobile Social Media Retrieval using Hierarchical Context Representation 12/2010 - 07/2011
Ministry of Knowledge and Economy (MKE)

· As a member of the project, developed planar painting detection and recognition module for enrolled tag retrieval as a preliminary context, developed in-situ code registration module for enrolling a tag.

Touchless Finger-vein Recognition System for User Authentication 10/2007 - 06/2008
Seoul Development Institute (SDI)

· As a member of the project, developed touchless finger-vein recognition system.

Unobtrusive Iris Recognition Technology (Iris Recognition on Mobile Devices) 08/2005 - 06/2008
Korea Science and Engineering Foundation (KOSEF)

· As a member of the project, developed eyelid localization method for improving iris recognition accuracies and integrated other modules, such as iris region detection and pattern extraction/matching, for making a complete mobile iris recognition system.

INVITED TALKS

Facial Affect Recognition using Deep Learning
Computer Laboratory module (Affective Computing), University of Cambridge, UK. 02/11/2017

Towards Affect Recognition In The Wild: Registration-free Smile Detection Using CNN
Augmented Reality Research Centre (ARRC), KAIST, S. Korea. 03/08/2017

Human Behaviour and Affect Recognition: Hand Gestures and Facial Expression
Intelligent Image Processing Research Centre, KETI, S. Korea. 01/08/2017

Alumni Mentoring: Research Topics and Career Path in AR/VR
Graduate School of Culture Technology, KAIST, S. Korea. 04/05/2016

Hand Gesture-based User Interface in Ubiquitous Virtual Reality
College of Information and Communication Engineering, Daegu University, S. Korea. 29/04/2016

Symbolic Hand Gesture Interface in Wearable AR: Multi-Layered Forest-based Gestures Learning
Realistic Information Platform Research Center, KETI, S. Korea. 26/04/2016

NDHS Mentoring: Research Topics and Career Path in Computer Science and Engineering
NamDoHakSuk (NDHS), Seoul, S. Korea. 02/04/2016

Hand Gesture-based UI in Egocentric Viewpoint: Learning Spatio-Temporal Classifiers
Computer Graphics Department, Max-Planck Institute for Informatics (MPII), Germany. 01/02/2016

Special Lecture Series: Research Topics and Career Path in Computer Science and Engineering
Mokpo Hongil High School, S. Korea. 18/12/2015

Learning Spatio-temporal Classifier for Articulated Hand Gestures in UVR
VTouch Research Group, VTouch Inc, S. Korea. 17/12/2015

Hand-based User Interaction Research Trends and User Experience Design in UVR
GSCT Course (GCT555: 3D Interaction Design), KAIST, S. Korea 12/11/2015

User Interface Research Trends and Its Industrial Applications in UVR
Korea Electric Power Research Institute, Korea Electric Power Corporation (KEPCO), S. Korea. 15/10/2015

UVR Research Trends and Hand-based Interaction in Wearable UVR
Realistic Information Platform Research Center, KETI, S. Korea. 03/08/2015

PROFESSIONAL SERVICE

Organizing Committees
IEEE CVPR Workshop on Observing and Understanding **HANDS** in Action, Tech. Program Committee 2016
IEEE International Symposium on Ubiquitous Virtual Reality (ISUVR), General Chair 2015
IEEE ISUVR, Organizing Chair 2013
IEEE ISUVR, Student Volunteer Chair 2012

Reviewer
Sensors (ISSN 1424-8220) 2017
28th British Machine Vision Conference (BMVC) 2017
12th IEEE Conference on Automatic Face and Gesture Recognition (FG) 2017, 2018
Image and Vision Computing (IVC) Journal 2016

IEEE Transactions on Visualization and Computer Graphics (TVCG)	2016
Augmented Human International Conference (AH)	2016
IEEE CVPR Workshop on **HANDS**	2016
IEEE International Symposium on Mixed and Augmented Reality (ISMAR)	2011, 2013, 2015
International Journal of Robotics and Automations (IJRA)	10/2009

Korean Institute of Next Generation Computing (KING Computing) 06, 12/2015

Student Volunteer

IEEE ISMAR	2013
HCI International	2011
IEEE ISUVR	2008-2010

EXHIBITION AND SELECTED PRESS

Exhibition

Center of Human-centered Interaction for Coexistence (CHIC) Tech. Fair 2015, 09-10/07/2015
"3D Finger CAPE" and "SD Gesture"

Selected Press

Korean Broadcasting System (KBS1): Cosmopolitan, 18/04/2015
"Augmented Reality: intersection of virtual reality and reality", "3D Finger CAPE"

TECHNICAL SKILLS

Programming Languages	**C/C++**, **Python**, Matlab, Objective C, Java, and HTML
Operating Systems	**Windows**, **Linux/Unix**, iOS, and Mac OS X
Libraries	OpenCV, **Theano**, Point Cloud Library (PCL), and Kinect for Windows SDK
Professional Tools	Adobe Photoshop, Adobe Illustrator, and Autodesk 3ds MAX

REFERENCES

Ioannis Patras, Ph.D. Tel: +44 (0)20 7882 7523
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Queen Mary University of London (QMUL) Email: i.patras@qmul.ac.uk
E103, School of EECS, QMUL, Mile End road, London E1 4NS, UK http://www.eecs.qmul.ac.uk/∼ioannisp/

Hatice Gunes, Ph.D.
Senior Lecturer (Associate Professor), Computer Laboratory
University of Cambridge Email: Hatice.Gunes@cl.cam.ac.uk
William Gates Bldg., 15 JJ Thomson Ave., Cambridge CB3 0FD, UK https://www.cl.cam.ac.uk/∼hg410/

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Sung-Hee Lee, Ph.D. Tel: +82 (0)42 350 2925
Assistant Professor, Graduate School of Culture Technology
KAIST Email: sunghee.lee@kaist.ac.kr
3322, GSCT(N25), KAIST, Daejeon 34141, S.Korea http://motionlab.kaist.ac.kr/cglab/