

Jung-Hyun Byun

Last updated: December 6, 2019

contact

junghyun.byun
@yonsei.ac.kr

languages

Korean (native)
English (fluent)

programming

C++ (skilled)
Python/CUDA/
Matlab/Java (user)

skills

OpenCV, OpenGL,
openFrameworks

view online



Interests

computer vision, computer graphics, machine learning and human-computer interaction
augmented reality, projection mapping, point cloud processing and scene reconstruction

Education

2015.9.1 –2020.08.31	Ph.D. candidate in Computer Science	Yonsei University, Korea
2011.3.1 –2015.2.28	B.Sc. in Computer Science and Engineering	Yonsei University, Korea

Selected Publications

Journal articles

PPAP: Perspective Projection Augment Platform with Pan–Tilt Actuation for Improved Spatial Perception

Byun, Jung-Hyun, Han, T.-D.

Sensors, p. 2652. Multidisciplinary Digital Publishing Institute 2019

AR Pointer: Advanced Ray-Casting Interface Using Laser Pointer Metaphor for Object Manipulation in 3D Augmented Reality Environment

Ro, H., **Byun, Jung-Hyun**, Park, Y. J., Lee, N. K., Han, T.-D.

Applied Sciences, p. 3078. Multidisciplinary Digital Publishing Institute 2019

Conference proceedings

Accurate Control of a Pan-tilt System Based on Parameterization of Rotational Motion

Byun, Jung-Hyun, Chae, S., Han, T.

Eurographics 2018 (Oral Presentation), Proceedings of the 39th Annual European Association for Computer Graphics Conference, 2018

AIR: Anywhere Immersive Reality with User-Perspective Projection

Byun, Jung-Hyun, Chae, S., Yang, Y., Han, T.

Eurographics 2017 (Oral Presentation), Proceedings of the 38th Annual European Association for Computer Graphics Conference, 2017

Awards

2018	Best Demo Award ACM International Conference on Multimedia (ACM MM)
------	---

2018	Ph.D. Fellowship Award NAVER Corporation
2019	Best Paper Presentation Award Korea Multimedia Society
2019	Merit Academic Paper Award Yonsei University

Invited Talks

2019	Title: Projection Mapping and Augmented Reality for Pervasive AR Environment NAVER Corporation	NAVER Tech Talk
------	--	-----------------

Patent

Domestic (Korea)

AR System using Mobile Projection Technique and Operating Method Thereof
 Han, T., Kim, D. C., Seo, J., Chae, S., Yang, Y., **Byun, Jung-Hyun**
Korea Patent Registration No. 10-1819589-0000, 2018

Projects

2018.09.01 –2020.08.31	Integration of Context-aware Pervasive AR Platform for Personal Assistant Implementation National Research Foundation of Korea (NRF) Role: Project Manager & Lead Researcher	<ul style="list-style-type: none"> • Research on applicability of deep learning-based spatial context-awareness in an augmented reality environment. • Research on integration of scene understanding technologies with projection-based augmented reality. • Research on real-time dynamic projection mapping on a pan-tilt platform.
2018.04.30 –2018.10.31	Development of hand motion recognition technology based on sensor fusion Samsung Electronics Company (SEC) Role: Project Manager	<ul style="list-style-type: none"> • Managed implementation of algorithms for identifying hand postures of workers using IMU sensor data.
2015.11.01 –2018.10.31	Pervasive AR interaction platform construction using a mobile projection technology National Research Foundation of Korea (NRF) Role: Project Manager & Lead Researcher	<ul style="list-style-type: none"> • Designed a user-perspective rendering algorithm for correcting distortions of projection mapping caused by surface geometry. • Designed a visual servoing algorithm for accurately controlling pan-tilt servo motors based on rotation axis calibration.

- 2015.08.01 –2017.03.31 **Development of filming and rendering technology based on multi-autonomous flight collaboration for large-scale performance and broadcasting** Korea Institute of Science and Technology (KIST)
 Role: Researcher & Developer
- Designed and implemented scale-adaptive visual object tracking algorithm based on SVM.
 - Developed a Windows program for tracking multiple objects based on epipolar geometry.
- 2015.04.01 –2017.12.31 **Research of vision-based mobile object recognition technology for life logging** Korea Institute of Science and Technology (KIST)
 Role: Researcher & Developer
- Implemented keypoint extraction and descriptor matching algorithms on an Android platform.
 - Developed Android applications for marker-less augmented reality and medicine recognition.

Other Publications

Journal articles

PRISM: Interactive Projection Display System for Pervasive Registration of Interface with Spatial Manipulation

Byun, Jung-Hyun, Ro, H., Kim, K., Han, T.-D.

Under Reviewv. 2020

Axis Bound Registration of Pan-Tilt RGB-D Scans for Fast and Accurate Reconstruction

Byun, Jung-Hyun, Han, T.-D.

Under Reviewv. 2019

Conference proceedings

FRISP: Framework for Registering Interactive Spatial Projection

Byun, Jung-Hyun, Ro, H., Han, T.-D.

Proceedings of the 25th International Conference on Intelligent User Interfaces Companion, 2020

Adaptive projection augmented reality with object recognition based on deep learning

Park, Y. J., Ro, H., **Byun, Jung-Hyun**, Han, T.-D.

Proceedings of the 24th International Conference on Intelligent User Interfaces: Companion, 2019

Projection-Based Augmented Reality Robot Prototype with Human-Awareness

Ro, H., **Byun, Jung-Hyun**, Kim, I., Park, Y. J., Kim, K., Han, T.-D.

2019 14th ACM/IEEE International Conference on Human-Robot Interaction (HRI), 2019

Display methods of projection augmented reality based on deep learning pose estimation

Ro, H., Park, Y. J., **Byun, Jung-Hyun**, Han, T.-D.

ACM SIGGRAPH 2019 Posters, 2019

Mobile device interaction using projector metaphor

Ro, H., Park, Y. J., **Byun, Jung-Hyun**, Han, T.-D.

Proceedings of the 24th International Conference on Intelligent User Interfaces: Companion, 2019

Meet AR-bot: Meeting Anywhere, Anytime with Movable Spatial AR Robot

Park, Y. J., Yang, Y., Ro, H., **Byun, Jung-Hyun**, Chae, S., Han, T. D.

ACM International Conference on Multimedia (ACM MM), 2018

PAMI: Projection Augmented Meeting Interface for Video Conferencing

Ro, H., Kim, I., **Byun, Jung-Hyun**, Yang, Y., Park, Y. J., Chae, S., Han, T.

ACM International Conference on Multimedia (ACM MM), 2018

A dynamic depth-variable ray-casting interface for object manipulation in ar environments

Ro, H., Chae, S., Kim, I., **Byun, Jung-Hyun**, Yang, Y., Park, Y., Han, T.

Systems, Man, and Cybernetics (SMC), IEEE International Conference on, 2017

Scale-adaptive tracking with structured output

Byun, Jung-Hyun, Chae, S.-H., Choi, H., Han, T.-D.

Proceedings of HCI Korea, 2016

Personal Smart Space: IoT based User recognition and Device control

Chae, S., Yang, Y., **Byun, Jung-Hyun**, Han, T.-D.

Semantic Computing (ICSC), IEEE Tenth International Conference on, 2016

Smart advisor: Real-time information provider with mobile augmented reality

Chae, S., Yang, Y., Choi, H., Kim, I., **Byun, Jung-Hyun**, Jo, J., Han, T.

Consumer Electronics (ICCE), IEEE International Conference on, 2016