Jung-Hyun **Byun**

변정현, Contact: junghyun.byun@yonsei.ac.kr

currently at
Ph.D. Candidate,
Yonsei University,
Seoul, Korea

languages
Korean (native)
English (fluent)

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

skills
OpenCV, OpenGL,
openFrameworks

last updated
June 10, 2020

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, Seoul, Korea
Thesis: Projection Mapping and Augmented Reality for Pervasive AR Framework and Environment

2011.3.1 –2015.2.28 **B.Sc.** in Computer Science and Engineering — Yonsei University, Seoul, 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

2019 **Merit Academic Paper Award (**우수논문 장려상**)**
Yonsei University (연세대학교)

2019 **Best Paper Presentation Award (**우수 논문 발표상**)**
Korea Multimedia Society (한국멀티미디어학회)

2018 **Ph.D. Fellowship Award**
NAVER Corporation (네이버 주식회사)

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

Invited Talks

2019 **NAVER Tech Talk** NAVER Corporation (네이버 주식회사)
Projection Mapping and Augmented Reality for Pervasive AR Environment

Patent

Domestic (Republic of Korea)

이동형 프로젝션 기술을 이용한 증강현실 시스템 및 그 운영 방법
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 퍼스널 어시스턴트 구현을 위한 맥락인지 **Pervasive AR** 플랫폼 구축
Integration of Context-aware Pervasive AR Platform for Personal Assistant Implementation National Research Foundation of Korea (한국연구재단)
Role: Project Manager & Lead Researcher

• 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 센서 융합 기반 손 동작 인식 기술 개발
Development of hand motion recognition technology based on sensor fusion Samsung Electronics Company (삼성전자)
Role: Project Manager

• Managed implementation of algorithms for identifying hand postures of workers using IMU sensor data.

2015.11.01 –2018.10.31 이동형 프로젝션 기술을 이용한 **Pervasive AR** 인터랙션 플랫폼 구축
Pervasive AR interaction platform construction using a mobile projection technology National Research Foundation of Korea (한국연구재단)
Role: Project Manager & Lead Researcher

• 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 대규모 공연 및 방송을 위한 다중 자율 비행체 협업 기반 첨단 촬영 및 렌더링 기술 개발
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, 한국과학기술연구원)
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 라이프 로깅을 위한 영상 기반 모바일 객체 인식 연구 개발
Research of vision-based mobile object recognition technology for life logging Korea Institute of Science and Technology (KIST, 한국과학기술연구원)
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 Review. 2020

Axis Bound Registration of Pan-Tilt RGB-D Scans for Fast and Accurate Reconstruction
Byun, Jung-Hyun, Han, T.-D.
Under Review. 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