

Jung-Hyun Byun

변정현, **Contact:** jung Hyun.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

July 15, 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

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| 2015.9.1
–2020.08.31 | Ph.D. candidate in Computer Science
Thesis: Pervasive AR Environment via Projection Mapping: the System, Methods and Interactions | Yonsei University, Seoul, Korea |
| 2011.3.1
–2015.2.28 | B.Sc. in Computer Science and Engineering | Yonsei University, Seoul, Korea |

Selected Publications

Journal articles

- Axis Bound Registration of Pan-Tilt RGB-D Scans for Fast and Accurate Reconstruction
Byun, Jung-Hyun, Han, T.-D.
Pattern Recognition Letters (accepted for publication). 2020
- 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

- 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
- 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

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| 2019 | Merit Academic Paper Award (우수논문 장려상)
Yonsei University (연세대학교) |
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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 Projection Mapping and Augmented Reality for Pervasive AR Environment	NAVER Corporation (네이버 주식회사)
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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	<p>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</p> <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	<p>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</p> <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	<p>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</p> <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 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

Conference proceedings

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