

# Dongha Chung

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## EDUCATION

**Korea Advanced Institute of Science and Technology**, Yuseong-gu, Daejeon, Republic of Korea

- Ph.D. student (**now in leave of absence**) in Mechanical Engineering Aug 2017 –
  - Adviser: Prof. Jinwhan Kim
  - Focus: Autonomous underwater vehicle(AUV), Computer Vision, SLAM
- M.S. in Mechanical Engineering Aug 2015 – Aug 2017
  - Adviser: Prof. Jinwhan Kim
  - Thesis: Stereo Vision Based Pose Estimation Relative to Planar Surface towards Underwater Ship Hull Inspection
  - Focus: Autonomous underwater vehicle(AUV), Computer Vision, Stereo Vision
  - Cumulative GPA: 3.45 / 4.30
- B.S. in Mechanical Engineering Feb 2009 – Aug 2015
  - Cumulative GPA: 3.25 / 4.30

## RESEARCH EXPERIENCE

**Mobile Robotics & Intelligence Laboratory**, KAIST, Graduate researcher

- Control of underwater vehicle
  - Domestic conference [4]
  - Development of an autonomous ship-hull inspection system, Ministry of Oceans and Fisheries
  - A Study on the Path Planning/Following and Obstacle Avoidance for Autonomus Underwater Vehicle, Agency for Defense Development
- Underwater computer vision
  - Domestic conference[1,2,3], International conference[1,2,3], Journal[1]
  - Development of an autonomous ship-hull inspection system, Ministry of Oceans and Fisheries

## PROFESSIONAL AFFILIATIONS & ACTIVITIES

**Seoul Robotics**, Gangnam-gu, Seoul, Republic of Korea

- Robotic Perception Engineer, Research Team, Jan 2019 – Current
  - Development of ground detection algorithm using LiDAR for autonomous vehicle.
  - Development of lane detection algorithm using LiDAR for autonomous vehicle [Demo]
  - Development of pedestrian classification algorithm using LiDAR

## SKILLS

Programming Languages: C++, Matlab, Python

## PUBLICATIONS

(\* corresponding author)

### JOURNALS

- [1] S. Hong, D. Chung, J. Kim\*, Y. Kim, A. Kim and H. Yoon, "In-water visual ship hull inspection using a hover-capable underwater vehicle with stereo vision," *Journal of Field Robotics*, vol. 36, no. 3, pp. 531-546, May 2019.

### INTERNATIONAL CONFERENCES

- [1] D. Chung and J. Kim\*, "Pose Estimation Considering an Uncertainty Model of Stereo Vision for In-Water Ship Hull Inspection," in *Proceedings of 11<sup>th</sup> IFAC Conference on Control Applications in Marine Systems (CAMS)*, Opatija, Croatia, Sep 2018.
- [2] S. Hong, D. Chung, and J. Kim\*, "Development of a Hover-Capable AUV System for Automated Visual Ship-Hull Inspection and Mapping," in *Proceedings of MTS/IEEE OCEANS*, Anchorage, USA, Sep 2017.
- [3] D. Chung, S. Hong, and J. Kim\*, "Underwater Pose Estimation Relative to Planar Hull Surface Using Stereo Vision," in *Proceedings of IEEE/OES International Symposium on Underwater Technology(UT)*, Busan, Republic of Korea, Feb 2017.

### DOMESTIC CONFERENCES

- [1] D. Chung, S. Hong, and J. Kim\*, "Relative Pose Estimation based on Stereo Vision System Toward Ship Hull for Hull Relative Navigation," in *Proceedings of the 13th Korea Robotics Society Annual Conference*, Gangwon-do, Republic of Korea, Jan 2018.

- [2] S. Hong, D. Chung, J. Kim\*, C. Jung, S. Ahn, and J. Lee, "Development of an Autonomous Underwater Ship Hull Inspection System and Its Preliminary Test," in *Proceedings of the Korean Association of Ocean Science and Technology Societies, Joint Conference*, Busan, Republic of Korea, Apr 2017.
- [3] D. Chung, S. Hong, and J. Kim\*, "Surface Normal Estimation Using Stereo Vision For Hull-Relative Navigation of an Underwater Robot," in *Proceedings of the 12th Korea Robotics Society Annual Conference*, Gangwon-do, Republic of Korea, Feb 2017.
- [4] (Outstanding student paper presentation award) D. Chung and J. Kim\*, "Attitude Control of an Unmanned Underwater Vehicle using Quaternion Feedback," in *Proceedings of the Korean Association of Ocean Science and Technology Societies, Joint Conference*, Busan, Republic of Korea, May 2016.

**PATENT**

- [1] J. Kim, J. Park, S. Hong, D. Chung, "Normal vector extraction apparatus and method thereof based on stereo vision for hull underwater inspection using underwater robot," 10-1923581-0000. Nov 2018.

**AWARDS**

- Second award in "LG Mobile Projector Marketing Idea Contest" Aug 2009
- Outstanding student paper presentation award (Domestic conference [4]) Nov 2016

**OTHER WORK  
EXPERIENCE**

**Teaching Assistnace**, Department of mechanical engineering, KAIST

- **ME401** Capstone design Fall semester, 2018
- **ME490** Programming for autonomous mobile system Fall semester, 2018
- **ME652** Mobile robotics Spring semester, 2018
- **ME251** Dynamics Fall semester, 2017

**Republic of Korea Marine Corps.**, Pohang, Gyeongsangbuk-do, Republic of Korea

- Sergeant, 72<sup>nd</sup> battalion May 2011 – Feb 2013

**LANGUAGES**

- Korean: Native language.
- English: Upper-Intermediate.
  - TOEIC 920 - Dec 2017