Dongha Chung

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EDUCATION

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

- Ph.D. student 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 Oveans and Fisheries

PROFESSIONAL AFFILIATIONS & ACTIVITIES

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

- Robotic Perception Engineer, Research Team, — Jan 2019 – Jan 2020
  - 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
  - Development of pedestrian tracking algorithm using LiDAR [Demo]

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 11th 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

- Sergent, 72nd battalion — May 2011 – Feb 2013

LANGUAGES

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