Chanoh Park

Computer Vision · Robotics Researcher

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Education

Commonwealth Scientific and Industrial Research Organisation (CSIRO)
Queensland University of Technology (QUT) — *Brisbane, Queensland, Australia*

PhD. in Electrical Engineering and Computer Science — *Nov 2019(expected)*

- Joint PhD program.

Sungkyunkwan University (SKKU) — *Suwon, Korea*

M.S. in Electrical and Computer Engineering — *Feb 2012*

Seoul National University of Science and Technology (SNUT) — *Seoul, Korea*

B.S. in Electronic and Information Engineering — *Feb 2010*

Graduate Courses

Pattern Recognition, Robot Vision, Optimization Methods, Computer Vision, Computer Vision Theory, Genetic Algorithms, Advanced Probability and Random Processes, Microprocessor Applications, Advanced Network Design, Lower Power VLSI Design, Analog/Mixed-Signal Design, Digital Integrated Circuits

Research Experience

Data61, CSIRO — *Brisbane, Queensland, Australia*

PhD student — *Nov. 2016 - Exp. Apr. Present*

- Research of Learning-based Map-centric Continuous-Time SLAM (Simultaneous Localization and Mapping)
- Research topics: Deep map representation, Deep SLAM, Visual-Inertial-LiDAR SLAM, Probabilistic Sensor Fusion, Robust Optimization, Life-long mapping

eZRobotics — *Suwon, Korea*

Research Engineer. (*A substitute for mandatory military service.) — *Sep. 2012 - Jan. 2016*

- Design, simulation, implementation, and validation of vision-based industrial manipulator kinematics calibration and 3D/2D vision-based robot guidance algorithm.
- Developed a manipulator-based high-precision 3D measurement device with large working volume.

Intelligent Systems Research Institute — *SKKU, Suwon, Korea*

Research Assistant — *Jan. 2012 - Aug. 2012*

- Collaborated in a team to develop a robust 3D object recognition and pose estimation based on double layered particle filtering.
- Implementation of orientation SLAM and simple mono SLAM, intensively reviewed open source materials on filtering-based/graph-based SLAM, and structure from motion.

VLSI Algorithmic Design Automation Lab — *SKKU, Suwon, Korea*

Research Assistant — *May. 2010 - Dec. 2011*

- Designed a fast stereo matching algorithm with wide-dynamic search range, implemented FPGA version of depth map generator.
- Research and development into improvement of 3D video quality of stereoscopic camera by real-time depth map.
- Research and development of high-speed structured light 3D scanner on FPGA.

Institute for Biomedical Electronics — *SNUT, Seoul, Korea*

Research Assistant — *May. 2006 - Dec. 2009*

- Research and implementation of a portable bio-signal processing module.
- Designed analogue filter circuits for estimating ECG and PPG, an analogue signal stabilizer circuit for stable measurement of bio-signals, implemented analogue and digital mixed signal PCB with an 8-bit microprocessor
- Implemented digital signal processing algorithms for bio-signals.

Selected Publication

Conferences

- **Chanoh Park**, Soohwan Kim, Peyman Moghadam, Jiadong Guo, Sridha Sridharan, Clinton Fookes, "Robust Photogeometric Localization over Time for Map-Centric Loop Closure", submitted to RA-L with ICRA 2019 option.
- **Chanoh Park**, Soohwan Kim, Peyman Moghadam, Sridha Sridharan, Clinton Fookes, "Spatiotemporal Camera-LiDAR Calibration: A Markerless and Structureless Approach", submitted to RA-L with ICRA 2019 option.
- **Chanoh Park**, Peyman Moghadam, Soohwan Kim, Alberto Elfes, Clinton Fookes, Sridha Sridharan, "Elastic LiDAR Fusion: Dense Map-Centric Continuous-Time SLAM", ICRA 2018.
- **Chanoh Park**, Soohwan Kim, Peyman Moghadam, Clinton Fookes, Sridha Sridharan, "Probabilistic Surfel Fusion for Dense LiDAR Mapping ", ICCV workshop 2017.

Journal

- **Chanoh Park**, Peyman Moghadam, Soohwan Kim,, Sridha Sridharan, Clinton Fookes, "Continuous-Time Multi-Modal 3D SLAM", submitted to PAMI special issue on RGB-D.

Awards & Competitions

2011	**2nd place**, 7th SoC design contest, Project Title: "Visual Fatigue Reduction HW for User Comfort", Ministry of Trade, Industry and Energy & Seoul National University (SNU)	*Korea*
2011	**2nd place**, Core-A processor application design contest 2011, Project Title: "A bio-medical instrument using Core-A", Korean Intellectual Property Office & Korea Advanced Institute of Science and Technology (KAIST)	*Korea*
2010	**5th place**, Core-A processor application design contest 2010, Korean Intellectual Property Office & Korea Advanced Institute of Science and Technology (KAIST)	*Korea*
2008	**Appreciation Award**, International Capstone Design Fair, Project Title: uDoctor-Health Care System.	*Korea*

Achievements

Top-up Scholarship	Commonwealth Scientific and Industrial Research Organisation (CSIRO) (AUD $10k p.a.)	*2018-2019*
Scholarship	Commonwealth Scientific and Industrial Research Organisation (CSIRO) - Queensland University of Technology (QUT) Scholarship (AUD $26k p.a.)	*2018-2019*
Fellowship	Brain Korea 21 Fellowship	*2010-2011*
Scholarship	IC Design Education Center (IDEC), Korea Advanced Institute of Science and Technology (KAIST)	*2011*
Scholarship	Tuition fee waiver scholarship (USD $15k), Seoul National University of Science and Technology (SNUT)	*2005-2009*

Skills

Programming	• Adept in C/C++, Matlab, Python, OpenGL, OpenCV, Verilog, git • Prior experience with TensorFlow, Pytorch, PCL, ROS, Cuda, Shader
Embedded System/FPGA	• Adept in microprocessor architecture and programming • Prior experience with ZYNQ, DSP, Vivado, ISE, RTOS
Other Skills	• Prior experience with SolidWorks, PowerMill, Orcad