

Hyung-gun Chi

MASTERS STUDENT

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Education

Purdue University

MASTER OF SCIENCE IN MECHANICAL ENGINEERING

West Lafayette, IN, USA

Aug. 2018 - PRESENT

Yonsei University

BACHELOR OF SCIENCE IN MECHANICAL ENGINEERING

Seoul, South Korea

Mar. 2010 - Feb. 2017

Skills

Programming Python, C/C++, Matlab, SQL, JavaScript, HTML, CSS, PHP

Frameworks TensorFlow, Keras, PyTorch, ROS, OpenCV

Software Creo Parametric, SolidWorks, AutoCAD, HyperWorks, GAZEBO

Work Experience

Graduate Assistant

C-DESIGN LAB, PURDUE UNIVERSITY

West Lafayette, IN, USA

Aug. 2018 - Present

- Participated in many projects which developing 3D Deep Neural Networks and processing the 3D data

CEO and Python Developer

NEIL LAB CORPORATION

Seoul, South Korea

Sep. 2016 - Dec. 2017

- Developed an office automation system using Python specifically for automating tasks such as sending an e-mail or issuing receipts, and designed a back-end system and database for customer web-service which automatically scrap and integrate customer's financial and personal data.

Featured Projects

Hand segmentation with RGBD-T data (Relevant publication: [C4])

- Proposed a novel hand dataset by fusing RGB-D and thermal data for hand segmentation and developed a method which segment hands and objects with a multi-modal Deep Neural network dealing with RGBD-T data.

A Large-scale Mechanical Component Benchmark Dataset (Relevant publication: [C3])

- Introduced large-scale mechanical components a benchmark for the classification and retrieval tasks named Mechanical Components Benchmark and developed a data collecting pipeline including annotation interface and database.

Part Geometry Net (Relevant publication: [J4])

- Developed a Generative Adversarial Network which generates 3D objects given a discrete category condition and continuous instance-level attributes. Developed a 3D data pre-processing program which converts 3D data to various types of geometric tensors.

Latent Transformation Neural Network (LTNN) (Relevant publication: [J3])

- Developed a fully-convolutional conditional generative network which is capable of view synthesis using a light-weight neural network suited for real-time applications.

Visual Programming Language for Mobile Robots and IoT

- Proposed a web-based visual and spatial programming language that allows novice users and small industries to program mobile robots and IoT Nodes to execute planned tasks. Developed a virtual world using ROS with Python and GAZEBO for simulating the spatial programming language.

3D Objects Classification Model Evaluation (Relevant publication: [J2], [C2])

- Proposed an evaluation method for 3D Deep Neural Networks by visualizing the impact of each voxel of each 3D objects. Developed a web-based CAD data retrieval engine for demonstration.

Publications

Journal Papers

- [J4][PDF] S. Kim, **H. G. Chi** and Karthik Ramani. Object synthesis by learning part geometry with surface and volumetric representations. In *Computer-Aided Design*, submitted.
- [J3][PDF] S. Kim, N. Winovich, **H. G. Chi**, G. Lin, and K. Ramani "Latent transformations neural network for object view synthesis" (2019) *The Visual Computer*, pp. 1-15.
- [J2][PDF] H. T. Hwang, **H. G. Chi**, N. K. Kang, H. B. Kong and Soo-Hong Lee. "An Evaluation Methodology for 3D Deep Neural Network using Visualization in 3D Data Classification" (2019) *Journal of Mechanical Science and Technology (JMST)*, 33(3), pp. 1333-1339.
- [J1][PDF] JIN YONGZHU, **H. G. Chi** and Soo-Hong Lee. "A Study on the Optimal Design of Pedestrian Robots Using Jansen Mechanism". (2016) *Korean Journal of Computational Design and Engineering*, 22(2), pp. 18-22.

Conference Papers

- [C4][PDF] S. Kim, **H. G. Chi**, A. Unmesh and Karthik Ramani. Multispectral Video Dataset for First-person View Hand Segmentation during Activity with Objects and Tools. In *Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition*, submitted.
- [C3][PDF] **H. G. Chi***, S. Kim*, X. Hu, B. Franz, Q. Huang, and Karthik Ramani. A Large-scale Mechanical Components Benchmark for Deep Neural Networks. In *Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition*, submitted.
- [C2][PDF] H. Hwang, **H. G. Chi**, S. H. Lee. "A Research about 3D Design Data Classification with 3D Convolutional Neural Network" (2017) *Proceedings of the Society for Computational Design and Engineering Conference*, pp. 441-442.
- [C1][PDF] M. H. Woo, S. H. Kim, **H. G. Chi**, M. W. Park, J. K. Kim and S. H. Lee. "Development of Web-based, Module Structure Platform for Surgical Workflow Management". (2016) *Proceedings of the Society for Computational Design and Engineering Conference*, pp. 439-441.