Hyung-gun **Chi**

PHD STUDENT · SOFTWARE ENGINEER

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Research Interests

My research interests lie at the intersection of Computer Vision and Robotics, focusing on 3D Geometric Deep Learning and Temporal Action Anaylsis. In this area, I apply Machine/Deep Learning algorithms for Augmented/Virtual Reality and Video.

Education

Purdue University *West Lafayette, IN, USA*

PHD IN ELECTRICAL AND COMPUTER ENGINEERING *Aug. 2018 - PRESENT*

Yonsei University *Seoul, South Korea*

BS IN MECHANICAL ENGINEERING *Mar. 2010 - Feb. 2017*

Skills

Language	Python, Matlab, C/C++, SQL, JavaScript, HTML, CSS, PHP
Machine/Deep Learning	PyTorch, TensorFlow, Keras
Web Programming	MYSQL/mongoDB, Flask/Node.js
ETC	GAZEBO, ROS, SolidWorks, AutoCAD

Publications

Conference Proceedings

- [**C2**] A Large-scale Mechanical Components Benchmark for Deep Neural Networks. In proceedings of the 16th *European Conference on Computer Vision (ECCV)*, 2020.
- [**C1**] First-Person View Hand Segmentation of Multi-Modal Hand Activity Video Dataset. In proceedings of the 31st *British Machine Vision Conference (BMVC)*, 2020.

Journal Papers

- [**J3**] Object synthesis by learning part geometry with surface and volumetric representations. In *Computer-Aided Design* (2020): 102932.
- [**J2**] Latent transformations neural network for object view synthesis. In *The Visual Computer* (2019): 1-15.
- [**J1**] An Evaluation Methodology for 3D Deep Neural Network using Visualization in 3D Data Classification. In *Journal of Mechanical Science and Technology (JMST)* 33, no. 3 (2019): 1333-1339.

Research Experience

Weakly-Supervised Temporal Action Localization *C-Design LAB, Purdue Univ.*

GRADUATE RESEARCH ASSISTANT *May. 2020 - Present*

- Proposed a novel architecture to localize temporal boundaries of action in untrimmed videos when only given action order.
- Formulated action localization problem as a sequence translation problem and applied Transformer Architecture.

A Large-scale Mechanical Component Benchmark Dataset [*C2*] *C-Design LAB, Purdue Univ.*

GRADUATE RESEARCH ASSISTANT *Feb. 2019 - Mar. 2020*

- Introduced a large-scale mechanical components benchmark for the classification and retrieval tasks.
- Developed a data collecting pipeline including annotation interface and database.

Hand segmentation with RGBD-T data [*C1*] *C-Design LAB, Purdue Univ.*

GRADUATE RESEARCH ASSISTANT *Jul. 2019 - May. 2020*

- Proposed a novel hand video dataset with RGB, Depth, and Themral images for hand segmentation.
- Developed a method which segment hands and objects with a multi-modal Deep Neural network dealing with RGBD-T data.

Part Geometry Net (PGNet) [*J3*] *C-Design LAB, Purdue Univ.*

GRADUATE RESEARCH ASSISTANT *Oct. 2018 - Aug. 2019*

- Proposed a Generative Adversarial Network (GAN) that synthesize 3D objects given a discrete category condition and continuous instance-level attributes by fusing the various types of geometric information.
- Consturcted a part identifier module which learns part geometry to preserve part properties of 3D objects.

Latent Transformation Neural Network (LTNN) [*J2*] *C-Design LAB, Purdue Univ.*

GRADUATE RESEARCH ASSISTANT *Aug. 2018 - April. 2019*

- Proposed a fully-convolutional conditional generative network which is capable of view synthesis using a light-weight neural network suited for real-time applications.
- Developed conditional transformation unit which is designed to learn the latent space transformations corresponding to specified target views.