# Hyung-gun **Chi**

MASTERS STUDENT

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## Education

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|---|---|
| **Purdue University** | *West Lafayette, IN, USA* |
| MASTER OF SCIENCE IN MECHANICAL ENGINEERING | *Aug. 2018 - PRESENT* |
| **Yonsei University** | *Seoul, South Korea* |
| BACHELOR OF SCIENCE IN MECHANICAL ENGINEERING | *Mar. 2010 - Feb. 2017* |

## Skills

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|---|---|
| **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** — *West Lafayette, IN, USA*

C-DESIGN LAB, PURDUE UNIVERSITY — *Aug. 2018 - Present*

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

**CEO and Python Developer** — *Seoul, South Korea*

NEIL LAB CORPORATION — *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 motion prediction with RGBD-T data**

- Proposed a novel dataset by fusing RGB-D and thermal data for action recognition. Developed a method which predicts hand motion by segmenting hands and objects with a 3D Deep Neural network dealing with RGBD-T data.

**Mechanical Net**

- Collected massive 3D mechanical component CAD data with a web-scrapper and expanded the data for dense data distribution using Creo Parametric and SolidWorks API. Also, developed a web-based 3D CAD search engine using a 3D Deep Neural Network and PostgreSQL database.

**Part Geometry Net**

- 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)**

- Developed a fully-convolutional conditional generative network which is capable of view synthesis using a light-weight neural network suited for real-time applications. (*Relevant publication: [**J3**]*)

**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**

- 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. (*Relevant publication: [**J2**]*)

## Publications

### Journal Papers

- [**J3**][**PDF**] S. Kim, N. Winovich, **H. G. Chi**, G. Lin and and Karthik Ramani. "Latent Transformations Neural Network for Object View Synthesis" (2019) *The Visual Computer*, accepted
- [**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

- [**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.

### Patents

- [**P1**][**PDF**] **H. G. Chi**. "Computer Input Automation System" KR Patent (2017): 10-1745330.