Hyung-gun **Chi**

Master Student

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Research Interests

- 3D Geometric Deep Learning
- Robotics
- Smart Manufacturing

Education

Purdue University — *West Lafayette, IN, USA*

Master of Science in Mechanical Engineering — *Aug. 2018 - PRESENT*

- Advisor: Prof. Karthik Ramani, Donald W.Feddersen Professor of Mechanical Engineering

Yonsei University — *Seoul, S. Korea*

Bachelor of Science in Mechanical Engineering — *Mar. 2010 - Feb. 2017*

- Advisor: Prof. Soo-Hong Lee, Associate Professor of Mechanical Engineering
- 2011-2013, 2-year military service

Research Experience

Engineering Shape Benchmark (ESB) — *West Lafayette, IN*

Graduate Assistant, C-design LAB — *Jan. 2019 - Present*

- Collected Engineering shape using scrapper and expanded the data with parameterized CAD model to build a database
- Developed Creo Parametric and SolidWorks Python API for data expansion.

Latent Transformation Neural Network (LTNN) — *West Lafayette, IN*

Graduate Assistant, C-design LAB — *Aug. 2018 - Present*

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

Interventional Generative Network (IGN) — *West Lafayette, IN*

Graduate Assistant, C-design LAB — *Aug. 2018 - Present*

- Developed the GAN model which generate 3D objects given a discrete category condition and continuous instance-level attributes.

Visual Programming Language for Mobile Robots and IoT Nodes (VIPO) — *West Lafayette, IN*

Graduate Assistant, C-design LAB — *Aug. 2018 - Present*

- 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

ControllAR — *West Lafayette, IN*

Graduate Assistant, C-design LAB — *Aug. 2018 - Dec. 2018*

- Proposed a parametrizing interface, simple and accessible fabrication workflow with no soldering or sewing involved, and a pressure sensor using a soft piezoresistive elastomer material.

3D Object Classification Model Evaluation — *Seoul, S. Korea*

Research Assistant, Knowledge-Based Design LAB — *Feb. 2016 – Jul. 2017*

- Proposed a method which evaluate 3D neural network models using the visualization based on the decomposition of a model's predictions to apply the models in the field of mechanical design and manufacturing.

Module Structure Platform for Surgical Workflow Management — *Seoul, S. Korea*

Research Assistant, Knowledge-Based Design LAB — *Feb – Jul. 2016*

- Developed a web-based platform for integrated surgical information, to optimize surgical procedures and reduce medical loss caused by communication errors and lack of information.

Skills

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

Frameworks ROS, TensorFlow, Keras, Caffe

Software Creo Parametric, SolidWorks, AutoCAD, HyperWorks

Languages Korean, English

Publications

Journal Papers

- S. Kim, N. Winovich, **H. G. Chi**, G. Lin and and Karthik Ramani. "Latent Transformations Neural Network for Object View Synthesis" (2019) *International Journal of Computer Graphics*, submitted.
- L.Paredes, X. Qian, **H. G. Chi** and Karthik Ramani. "ControllAR: Design and Fabrication of a Universal Parametric Low-Profile Hand Wearable for Augmented Reality Interactions" (2019) *Interactive, Mobile, Wearable and Ubiquitous Technologies (IMWUT)*, under revision.
- 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" (2018) *Journal of Mechanical Science and Technology (JMST)*, accepted.

Conferences Papers

- S. Kim, **H. G. Chi** and Karthik Ramani. "FuseNet:Fusing surface and volumetric representations for 3D Shape Synthesis and Analysis" (2019) *International Conference on Computer Vision (ICCV)*, submitted.

Patents

- H. G. Chi. "Computer Input Automation System" KR Patent (2017): 10-1745330

Working Experience

NEIL LAB Corporation — *Seoul, S. Korea*

Co-founder & Python Developer — *Sep. 2016 - Aug. 2017*

- Automated an office platform for a tax office to enhance the office's work efficiency and customer service
- Developed a RPA system, using Python, to increase the efficiency of working in the office
- Led and managed the company with more than 20 employees as the CEO and selected as a startup funded by the Seongnam Industry Promotion Agency (fund amount: $ 30,000)

Republic of Korea Army — *Inje, S. Korea*

Sergeant & Squad leader — *Apr. 2011 – Jan. 2013*

- In charge of the maintenance of firearms, wireless devices, vehicles, and NBC equipment
- Led a squad as the squad leader; honored as a distinguished soldier

Extracurricular Activity

Habitat for Humanity Korea Campus Chapter — *S. Korea*

Member & President — *Mar. 2010 – Aug. 2016*

- Constructed houses for the homeless and worked on improving poor residential environments, during 26 and 7 occasions, respectively
- Led and managed the volunteer group for a year; received the first honor from 2014 Yonsei Club Evaluation

Korea Food for the Hungry International - campus volunteer group — *S. Korea*

Member — *Apr. 2013 – Nov. 2013*

- Taught and mentored preschool children and elementary school students at Seoul Children's Center

Honors & Awards

2016	**KISTI (Korea Institute of Science and Technology Information) President's Award,** Edison Challenge – Computer Aided Design Section	*Seoul, S. Korea*
2016	**CDE (Society for Computational Design and Engineering) President's Award,** CDE Challenge – Computational Design and Engineering Tools Section	*Daejeon, S. Korea*