

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, Caffe, PyTorch, ROS

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

- Founded a start-up company with more than 20 employees which developing a program for office automation and customer service

Projects

Mechanical Net

- Collected massive 3D mechanical component CAD data with a web-scraper 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.

FuseNet

- 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. (Relevant publication: [C1])

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.

ControllAR

- Proposed a parametrizing interface, simple and accessible fabrication workflow, and a pressure sensor using a soft piezoresistive elastomer material. Also, developed embedded system using Arduino and analyzed signals from different sensors and materials. (Relevant publication: [J2])

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: [J1])

Office Automation Platform

- Developed an office automation system using Python specifically for triggering the events such as sending an e-mail or issuing receipts. Also, Designed a PostgreSQL database for customer web-service. (Relevant patent: [P1])

Web-based Surgical Workflow Management Platform

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

Publications and Patents

Conference Papers

- [C1] 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.

Journal Papers

- [J3] S. Kim, N. Winovich, **H. G. Chi**, G. Lin and Karthik Ramani. "Latent Transformations Neural Network for Object View Synthesis" (2019) *The Visual Computer*, submitted.
- [J2] 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) *Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies (IMWUT)*, under revision.
- [J1] 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), 1333-1339.

Patents

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