

Hyung-gun Chi

PHD CANDIDATE

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Research Interests

My research interests lie in the fields of Computer Vision and Machine Learning. More specifically, I am interested in the Representation Learning for human action, 3D Computer Vision, and their applications in VR / AR devices and Autonomous Vehicles.

Education

Purdue University

West Lafayette, IN, USA

PHD IN ELECTRICAL AND COMPUTER ENGINEERING

Dec. 2023 (Expected)

- Thesis: Learning Representation for Understanding Human Action
- Advisor: Professor Karthik Ramani

Purdue University

West Lafayette, IN, USA

MS IN ELECTRICAL AND COMPUTER ENGINEERING

Dec. 2022

- Advisor: Professor Karthik Ramani

Yonsei University

Seoul, South Korea

BS IN MECHANICAL ENGINEERING

Feb. 2017

- Advisor: Professor Soo-Hong Lee

Publications and Patents

Conference Proceedings

- [C7] **H. Chi**, K. Lee, N. Agarwal, K. Ramani, and C. Choi. AdamsFormer for Spatial Action Localization in the Future, *Conference on Computer Vision and Pattern Recognition (CVPR)*, 2023. Submitted.
- [C6] **H. Chi**, S. Chi, Q. Huang, and K. Ramani. Skeleton-ODE: Learning Representation by Predicting the Future for Online Skeleton-based Action Recognition, *Conference on Computer Vision and Pattern Recognition (CVPR)*, 2023. Submitted.
- [C5] Y. Xu, A. Bazarjani, **H. Chi**, C. Choi, and Y. Fu. Uncovering the Missing Pattern: Unified Framework Towards Trajectory Imputation and Prediction, *Conference on Computer Vision and Pattern Recognition (CVPR)*, 2023. Submitted.
- [C4] **H. Chi**, S. Chi, S. Chan, and K. Ramani. Pose Relation Transformer: Refine Occlusions for Human Pose Estimation, *IEEE International Conference on Robotics and Automation (ICRA)*, 2023. Submitted.
- [C3] **H. Chi**, M. Ha, S. Chi, S. Lee, Q. Huang, and K. Ramani. InfoGCN: Representation Learning for Human Skeleton-based Action Recognition, In proceedings of *Conference on Computer Vision and Pattern Recognition (CVPR)*, 2022.
- [C2] **H. Chi**, S. Kim, X. Hu, Q. Huang, and K. Ramani. A Large-scale Mechanical Components Benchmark for Deep Neural Networks. In proceedings of the 16th *European Conference on Computer Vision (ECCV)*, 2020.
- [C1] S. Kim, **H. Chi**, and K. Ramani. 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] S. Kim, **H. Chi** and K. Ramani. Object synthesis by learning part geometry with surface and volumetric representations. In *Computer-Aided Design* (2021): 102932.
- [J2] S. Kim, N. Winovich, **H. Chi**, G. Lin, and K. Ramani. Latent transformations neural network for object view synthesis. In *The Visual Computer* (2019): 1-15.
- [J1] H. T. Hwang, **H. 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. In *Journal of Mechanical Science and Technology (JMST)* 33, no. 3 (2019): 1333-1339.

Preprinted papers

- S. Kim, J. Bae, **H. Chi**, S. Hong, B.S. Koh, and K. Ramani. Egocentric View Hand Action Recognition by Leveraging Hand Surface and Hand Grasp Type. *arXiv preprint arXiv:2109.03783*, 2021.

Patents

- [P2] K. Ramani, S. Kim, and **H. Chi**. Pixel-wise Hand Segmentation of Multi-modal Hand Activity Video Dataset. U.S. Patent Application No. 17/109,193.
- [P1] **H. Chi**. Computer Input Automation System. KR Patent No. 10-1745330, issued 2017.

Work Experience

Honda Research Institute

San Jose, CA, USA

RESEARCH INTERN

Jan. 2023 - Apr. 2023

- Conducted human pose prediction research for autonomous vehicles.

Honda Research Institute

RESEARCH INTERN

San Jose, CA, USA

May. 2022 - Aug. 2022

- Conducted research on future action forecasting task for autonomous vehicles.
- Developed a transformer-based algorithm for the task.

NEIL LAB Corporation

SOFTWARE ENGINEER & CEO

Seoul, South Korea

Sep. 2016 - Dec. 2017

- Founded and manage a start-up company as a CEO and senior software engineer.
- Developed an office automation system specifically for automating office tasks such as sending an e-mail or issuing receipts.
- Designed a back-end system and database for customer web-service which automatically collects and integrate financial and personal data. (Relevant patent: [P1])

Skills

Research and Development Stacks

Major Languages	Python, C/C++
Machine Learning	PyTorch, TensorFlow, Keras
Web Frameworks	Django, Flask, Node.js
Computer Vision	OpenCV, OpenGL
Web Languages	Nginx, React, HTML5, PHP, JavaScript, CSS
Database	MySQL, PostgreSQL, SQLite, MongoDB

Other Tools and Skills

Text Editors	Neovim & Vim
Other Languages	Shell Scripts(bszh, zsh), Matlab(Octave), R
Operating Systems	macOS, Linux Debian/Ubuntu, Windows
IDE	VSCode, Eclipse, IDEA
Softwares	SolidWorks, Catia, AutoCAD
VCS	Git

Academic Activities

Reviewer

- The IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR) 2023
- The British Machine Vision Conference (BMVC) 2020, 2021, 2022
- Journal of Visual Communication and Image Representation (JVCI)
- Journal of Computing and Information Science in Engineering (JCISE)

Invited Talks

Hongik University

Seoul, South Korea

Guest Lecturer: LEARNING REPRESENTATION FOR HUMAN ACTION RECOGNITION

Dec. 2022

References

Karthik Ramani	Professor, Purdue University	ramani@purdue.edu
Soo-Hong Lee	Professor, Yonsei University	shlee@yonsei.ac.kr