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. To appear.
- [**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 system for office/factory automation. WO Patent No. 18/074729, issued 2018.

Work Experience

Honda Research Institute — *San Jose, CA, USA*

Research Intern — *Jan. 2023 - Aug. 2023*

- Conducted human pose prediction research for autonomous vehicles.

Honda Research Institute *San Jose, CA, USA*

Research Intern *May. 2022 - Aug. 2022*

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

NEIL LAB Corporation *Seoul, South Korea*

Software Engineer & CEO *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 Langauges	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 IEEE/CVF International Conference on Computer Vision (ICCV) 2023
· The British Machine Vision Conference (BMVC) 2020, 2021, 2022
· The IEEE Conference on Artificial Intelligence (CAI) 2023
· 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