# Chuanruo Ning

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## Education

**Cornell University** — Ithaca, NY, United States
Ph.D. in Computer Science — Aug. 2024 – Present

**Peking University** — Beijing, China
Bachelor of Science in Computer Science — Aug. 2020 – Jun. 2024

## Research Experience

**3D Part Recognition from 2D Image with a Single 3D Annoation** — Jun. 2023 – Jan. 2024
Advisor: Prof. Alan Yuille — Johns Hopkins Univeristy

- Explore zero-shot object part segmentation that only requires a single 3D annotation for part definition.
- Establish 3D to 3D correspondence for uniform category-level 3D representation.
- Establish 3D to 2D correspondence for render-and-compare based part detection.

**Few-shot Affordance Learning for Articulated Objects** — Dec. 2022 – Jul. 2023
Advisor: Prof. Hao Dong — Peking University

- Efficiently manipulate unseen articulated objects in novel categories with minimal explorations.
- Propose to measure semantic similarity between local geometries across different categories.
- Enable model to perform few-shot learning on novel categories by discovering uncertain yet important areas.

**Foresightful Deformable Object Manipulation** — Jan. 2022 – May. 2023
Advisor: Prof. Hao Dong — Peking University

- Learn dense visual representations that reveal the dynamic and kinematic properties of deformable objects.
- Propose a novel training pipeline to take the future potential of object states into consideration.
- Train the model in a reversed step-by-step manner to make it foresightful.

## Publications and Manuscripts

* indicates equal contributions

- **Chuanruo Ning***, Jiawei Peng*, Yaoyao Liu, Jiahao Wang, Yining Sun, Alan Yuille, Adam Kortylewski, Angtian Wang. Part321: Recognizing Object Parts in 3D from a 2D Image Using 1-Shot Annotations. Under Review, 2024.
- Yitong Li*, Ruihai Wu*, Haoran Lu, **Chuanruo Ning**, Yan Shen, Guanqi Zhan, Hao Dong. Broadcasting Support Relations Recursively from Local Dynamics for Object Retrieval in Clutters. In RSS, 2024.
- **Chuanruo Ning**, Ruihai Wu, Haoran Lu, Kaichun Mo, Hao Dong. Where2Explore: Few-shot Affordance Learning for Unseen Novel Categories of Articulated Objects. In NeurIPS, 2023.
- Kai Cheng*, Ruihai Wu*, Yan Shen, **Chuanruo Ning**, Guanqi Zhan, Hao Dong. Learning Environment-Aware Affordance for 3D Articulated Object Manipulation under Occlusion. In NeurIPS, 2023.
- Ruihai Wu*, **Chuanruo Ning***, Hao Dong. Learning Foresightful Dense Visual Affordance for Deformable Object Manipulation. In ICCV, 2023.

## Selected Honors and Awards

- Huatai Securities Scholarship, Peking University, 2024.
- Merit Student, Peking University, 2023.
- John Hopcroft Scholarship, Peking University, 2022.
- Dean's Scholarship, Peking University, 2022.

## Academic Service

- Conference Reviewer: CVPR 2024–2025, NeurIPS 2024, AAAI 2024-2025, ICLR 2025.