

Jiude Wei

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Education

School of Electronic Information and Electrical Engineering, Shanghai Jiao Tong Univ.

Shanghai, China

B.S. IN ARTIFICIAL INTELLIGENCE, GUOZHI HONOR CLASS

Sep. 2021 - Present

- **GPA:** 90.4 / 100
- **Core Curriculum:**
 - Probability and Statistics (**100**)
 - Design and Analysis of Algorithms (**99**)
 - Linear Algebra (**97**)
 - Program Design (C++) (**95**)
 - Data Structure (**95**)

High School Affiliated to Shanghai Jiao Tong University

Shanghai, China

HIGH SCHOOL DIPLOMA

Sep. 2018 - Jun. 2021

- Ranked top 0.5% in High School Entrance Exam
- Won Prize of National Olympiad in Informatics in Provinces (NOIP) three years in a row

Publication

Synthesize Infinite Chairs with Rich Annotations from a Single One: A Procedural Approach

CVPR24 Submission

Jianhua Sun*, Yuxuan Li*, **Jiude Wei***, Longfei Xu, Nange Wang, Yining Zhang, Cewu Lu

- We took advantage of Analytic Ontology Templates in representing conceptual knowledge, proposed Procedure Object Generation paradigm to generate synthetic objects, in order to solve a series of robot and vision tasks.
- Jiude's contribution: Designed algorithms to generate infinite synthetic objects with real objects as a set across 8 categories from ShapeNet; Conducted experiments with collected dataset on multi vision tasks.

Representing Conceptual Knowledge of Objects with Analytic Ontology Templates

CVPR24 Submission

Jianhua Sun, Yuxuan Li, Longfei Xu, **Jiude Wei**, Liang Chai, Cewu Lu

- We proposed Analytic Ontology Template to conceptually represent objects, analytically describe geometric and kinematic concepts, and preserve their differentiability for fitting neural networks. We introduced articulated objects to leverage the conceptual representation for machine intelligence to explore general and conceptual knowledge.
- Jiude's contribution: Proved that AOT knowledge helps improve manipulation performance by robot manipulation experiment in SAPIEN simulator.

Current Research

Advantage of Conceptual Knowledge on Robot Tasks

- Semantics and affordance knowledge can yield from conceptual representation. Jiude is conducting research on how robot tasks can take benefit from conceptual knowledge. Huge improvement has been observed on agents with conceptual knowledge in manipulation tasks.

General AOT Grounding System

- Jiude is designing a general Analytic Ontology Template grounding system, which is able to ground conceptual representation to novel objects generally, in order to expand conceptual knowledge of machine intelligence from instance level to scene level.

Research Experience

MVIG lab, Shanghai Jiao Tong University

Shanghai, China

RESEARCH INTERN

Mar. 2023 - Present

- Jiude aims to empower machine intelligence with general conceptual cognition capability, in order to recognize and manipulate with real-world entities in controllable and interpretable human-like way. The ultimate goal is to create embodied AI with general conceptual knowledge. Jiude is guided by Jianhua Sun and Yuxuan Li, supervised by Prof. Cewu Lu.

- Jiude has interest in interpretability of machine learning in methodology of game-theoretic interactions. Jiude is guided by Huiqi Deng and Mingjie Li, supervised by Prof. Quanshi Zhang.

Honors & Awards

Enrolled in the first session of Guozhi Honor Class	Dec. 2021
First Price , NOIP (National Olympiad in Informatics in Province)	Dec. 2019
Second Price , NOIP (National Olympiad in Informatics in Province)	Dec. 2018
First Price , NOIP (National Olympiad in Informatics in Province)	Dec. 2017

Skills

Programming Language	C++, Python (PyTorch, Numpy. etc.), MatLab, \LaTeX , Markdown
Operation Platform	Linux, Windows
Language	Chinese, English (CET6: 596/710)