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PUBLICATION

Temporal and Object Quantification Networks

IJCAI 2021

Jiayuan Mao*, Zhezheng Luo*, Chuang Gan, Joshua B. Tenenbaum, Jiajun Wu,
Leslie Pack Kaelbling, Tomer D. Ullman

Neuro-Symbolic Reasoning

Language-Mediated, Object-Centric Representation Learning

ACL 2021 (Findings)

Ruocheng Wang*, Jiayuan Mao*, Samuel J. Gershman, Jiajun Wu

Concept Learning

Object-Centric Representation Learning

Hierarchical Motion Understanding via Motion Programs

CVPR 2021

Sumith Kulal*, Jiayuan Mao*, Alex Aiken, Jiajun Wu

Visual Program Representation

Grounding Physical Concepts of Objects and Events Through Dynamic Visual Reasoning

ICLR 2021

Zhenfang Chen, Jiayuan Mao, Jiajun Wu, Kwan-Yee K. Wong, Joshua B. Tenenbaum, Chuang Gan

Concept Learning

Counterfactual Reasoning

Object-Centric Diagnosis of Visual Reasoning

ArXiv 2020

Jianwei Yang, Jiayuan Mao, Jiajun Wu, Devi Parikh, David D. Cox, Joshua B. Tenenbaum, Chuang Gan

Concept Learning

Multi-Plane Program Induction with 3D Box Priors

NeurIPS 2020

Yikai Li*, Jiayuan Mao*, Xiuming Zhang, William T. Freeman, Joshua B. Tenenbaum, Noah Snavely, Jiajun Wu

Visual Program Representation

Perspective Plane Program Induction from a Single Image

CVPR 2020

Yikai Li*, Jiayuan Mao*, Xiuming Zhang, William T. Freeman, Joshua B. Tenenbaum, Jiajun Wu

Visual Program Representation

Program-Guided Image Manipulators

ICCV 2019

Jiayuan Mao*, Xiuming Zhang*, Yikai Li, William T. Freeman, Joshua B. Tenenbaum, Jiajun Wu

Visual Program Representation

Visual Concept-Metaconcept Learning

NeurIPS 2020

Chi Han*, Jiayuan Mao*, Chuang Gan, Joshua B. Tenenbaum, Jiajun Wu

Concept Learning

Visually Grounded Neural Syntax Acquisition

ACL 2020 (BP Nominee)

Haoyue Shi*, Jiayuan Mao*, Kevin Gimpel, Karen Livescu

Language Acquisition

- Neurally-Guided Structure Inference** ICML 2019
 Sidi Lu*, Jiayuan Mao*, Joshua B. Tenenbaum, Jiajun Wu
 Structure Inference
- The Neuro-Symbolic Concept Learner : Interpreting Scenes, Words, and Sentences From Natural Supervision** ICLR 2019 (Oral)
Jiayuan Mao, Chuang Gan, Pushmeet Kohli, Joshua B. Tenenbaum, Jiajun Wu
 Concept Learning
- Neural Logic Machines** ICLR 2019
 Honghua Dong*, Jiayuan Mao*, Tian Lin, Chong Wang, Lihong Li, Denny Zhou
 Neuro-Symbolic Reasoning
- Unified Visual-Semantic Embeddings : Bridging Vision and Language with Structured Meaning Representations** CVPR 2019 (Oral)
 Hao Wu*, Jiayuan Mao*, Yufeng Zhang, Yuning Jiang, Lei Li, Wei-Ying Ma
 Concept Learning Visual-Semantic Embeddings
- Neural Phrase-to-Phrase Machine Translation** ArXiv Preprint
 Jiangtao Feng, Lingpeng Kong, Po-Sen Huang, Chong Wang, Da Huang, Jiayuan Mao, Kan Qiao, Dengyong Zhou
 Neural Machine Translation
- Acquisition of Localization Confidence for Accurate Object Detection** ECCV 2018 (Oral)
 Borui Jiang*, Ruixuan Luo*, Jiayuan Mao*, Tete Xiao, Yuning Jiang
 Object Detection
- Learning Visually-Grounded Sementics from Contrastive Adversarial Samples** COLING 2018
 Haoyue Shi*, Jiayuan Mao*, Tete Xiao*, Yuning Jiang, Jian Sun
 Visual-Semantic Embeddings Adversarial Training
- Universal Agent for Disentangling Environments and Tasks** ICLR 2018
Jiayuan Mao, Honghua Dong, Joseph J. Lim
 Transfer Learning Deep Reinforcement Learning
- What Can Help Pedestrian Detection ?** CVPR 2017
Jiayuan Mao*, Tete Xiao*, Yuning Jiang, Zhimin Cao
 Transfer Learning Object Detection

EDUCATION AND RESEARCH EXPERIENCE

2019-Present	Massachusetts Institute of Technology Ph.D. Student in Computer Science <ul style="list-style-type: none">› Advisors : Joshua B. Tenenbaum and Leslie P. Kaelbling.› Member of the Computational Cognitive Science (COCOSCI) lab.› Member of the Learning and Intelligent Systems (LIS) lab.
2014-2019	Tsinghua University B.E. in Computer Science <ul style="list-style-type: none">› Special Pilot Computer Science Class (Yao Class)› Institute for Interdisciplinary Information Sciences› Member of Natural Language Processing laboratory : Learning Sememe-based Dependency Structures.
2018-2019	COCOSCI Group, Massachusetts Institute of Technology Visiting Student, Advisor : Joshua B. Tenenbaum <ul style="list-style-type: none">› Neural-symbolic concept learning : interpreting scenes, words, and sentences from natural supervision. (ICLR 2019)› Learning to describe natural images with programs. (ICCV 2019)
2018	Google AI China Center Research Intern, Mentor : Denny Zhou, Chong Wang <ul style="list-style-type: none">› Learning First-Order Logic Rules using Neural Networks.› Neural phrase-to-phrase machine translation.
2017	CLVR Lab, University of Southern California Visiting Student, Advisor : Joseph J. Lim <ul style="list-style-type: none">› Transfer learning for deep reinforcement learning. (ICLR 2018)

ACADEMIC SERVICE

Reviewer : ICLR 2022, CVPR 2022, NeurIPS 2021, ICML 2021, ICLR 2021, CVPR 2021, NeurIPS 2020, CVPR 2020, CVPR 2019.

TEACHING

Teaching Assistant : Object-Oriented Programming, 2017 Spring, Tsinghua University.

OPEN-SOURCED PROJECTS

Synchronized-BatchNorm-PyTorch : <https://github.com/vacancy/Synchronized-BatchNorm-PyTorch> Synchronized Batch Normalization implementation in PyTorch. 1314 Stars on GitHub.

PreciseRoIPooling-PyTorch : <https://github.com/vacancy/PreciseRoIPooling> Precise RoI Pooling with coordinate gradient support, proposed in my paper “Acquisition of Localization Confidence for Accurate Object Detection”. 720 Stars on GitHub.

SceneGraphParser <https://github.com/vacancy/SceneGraphParser> A python toolkit for parsing captions (in natural language) into scene graphs (as symbolic representations). 236 Stars on GitHub.