Andrii Zadaianchuk

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Education

ETH Zürich, Switzerland **04.2019 - 01.2024**
Ph.D. Student, Max Planck ETH Center for Learning Systems
Unsupervised object-centric representation learning for autonomous control

Universität Tübingen, Germany **10.2016 - 08.2018**
M.Sc., Graduate Training Centre of Neural Information Processing
GPA: 1.1/1.0

Work Experiences

Postdoc Researcher at University of Amsterdam

Causal Representation Learning **03.2024 - today**

PhD Researcher at Max Planck Institutes Tübingen

Object-centric Representation Learning for RL **04.2019 - 02.2024**

PhD Researcher at ETH Zürich

Object-Centric Representation Learning for RL **09.2020 - 08.2021**

Research Intern at Amazon

Scaling Object-Centric Learning **05.2022 - 11.2022**

Research Intern at Amazon

Unsupervised Semantic Segmentation **09.2021 - 02.2022**

Research Intern at Max Planck Institutes Tübingen

Transfer Learning for Dynamical Systems **10.2018 - 03.2019**

Projects

Object-Centric Learning for Real-World Videos / MPI IS **01.2023 - 09.2023**
Developed a novel VideoSAUR method for video-based object-centric learning that scales to real-world video data like YouTube videos and brings state-of-the-art performance on synthetic MOVi datasets.

Bridging the Gap to Real World Object-Centric Learning / Amazon **05.2022 - 11.2022**
Significantly improved current state of the art in object-centric learning by combining it with contrastive representation learning. Contributed to initial idea, baselines, experiments, and writing.

Unsupervised Semantic Segmentation with Self-supervised Object-centric Representations / Amazon **09.2021 - 02.2022**
Explored properties of state-of-the-art self-supervised representations and combined it with unsupervised saliency segmentation methods for object categories discovery and unsupervised semantic segmentation (+12 mIoU on PASCAL VOC).

RL self-supervision with Independently Controllable Subgoals / ETHZ **01.2021 - 07.2021**
Improved multi-object manipulation task (up to 6 objects rearrangement) by discovering independently controllable components with sparse GNN dynamics model

Self-supervised Visual RL with Object-centric Representations / MPI IS **06.2020 - 10.2020**
Developed autonomous RL agent that learns SotA policies in visual multi-object rearrangement and pushing tasks without a reward signal by incorporating object-centric representations and attention based goal-conditioned policies

Transferable Dynamics Learning / MPI IS **10.2018 - 07.2019**
Compared the out-of-distribution generalization and transfer properties of 4 SotA dynamics learning models on the real-world robotics dataset

Online Step Size Adaptation for Stochastic Optimization / MPI IS **01.2018 - 08.2018**
Developed quadratic step-size adaptation method with 10 times less sensitive hyperparameters by using quadratic approximation and proximal point methods

Awards and Leadership

Awarded **DAAD scholarship** (25/600 applicants) due to clear objectives and academic achievements **08.2016 - 09.2018**

Tutored **Deep Learning** (with up to 400 students) and **Machine Learning** (more than 1000 students) courses **10.2020 - 05.2021**
ETH Zürich, Switzerland

Publications

Object-Centric Learning for Real-World Videos by Predicting Temporal Feature Similarities
Conference on Neural Information Processing Systems, 2023
Andrii Zadaianchuk, Maximilian Seitzer, Georg Martius

Unsupervised Semantic Segmentation with Self-supervised Object-centric Representations
International Conference on Learning Representations, 2023 (spotlight presentation)
Andrii Zadaianchuk, Matthäus Kleindessner, Yi Zhu, Francesco Locatello, Thomas Brox

Bridging the Gap to Real World Object-Centric Learning
International Conference on Learning Representations, 2023
Maximilian Seitzer, Max Horn, **Andrii Zadaianchuk**, Dominik Zietlow, Tianjun Xiao, Carl-Johann Simon-Gabriel, Tong He, Zheng Zhang, Bernhard Schölkopf, Thomas Brox, Francesco Locatello

Self-supervised Reinforcement Learning with Independently Controllable Subgoals
Conference on Robot Learning, 2021
Andrii Zadaianchuk, Georg Martius, Fanny Yang

Self-supervised Visual Reinforcement Learning with Object-centric Representations
International Conference on Learning Representations, 2021 (spotlight presentation)
Andrii Zadaianchuk, Maximilian Seitzer, Georg Martius

Unsupervised Learning of Independently Controllable Dynamic Components
ICML Object-Oriented Learning (OOL): Perception, Representation, and Reasoning Workshop, 2020
Andrii Zadaianchuk, Georg Martius

A New Robotic Dataset for Transferable Dynamics Learning
International Conference on Robotics and Automation, 2020
Diego Alejandro Agudelo-España, **Andrii Zadaianchuk**, Philippe Wenk, Aditya Garg, Joel Akpo, Felix Grimminger, Julian Viereck, Maximilien Naveau, Ludovic Righetti, Georg Martius, Andreas Krause, Bernhard Schölkopf, Stefan Bauer, Manuel Wüthrich

Selection of optimal physical activity classification model using measurements of accelerometer
Information Technologies, 2016, 22(4) : 313-328.
Andrii Zadaianchuk, Mariia Popova, Vadim Strijov