Ondrej Biza

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Publications

Conference

O Biza, S van Steenkiste, MSM Sajjadi, GF Elsayed, A Mahendran, T Kipf. **Invariant Slot Attention: Object Discovery with Slot-Centric Reference Frames.** ICML'23. Link to PDF.

D Klee, O Biza, R Platt, R Walters. **Image to Sphere: Learning Equivariant Features for Efficient Pose Prediction.** ICLR'23. Link to PDF.

O Biza*, JY Park*, L Zhao, JW van de Meent, R Walters. **Learning Symmetric Embeddings for Equivariant World Models.** ICML'22. * joint first authorship. Link to PDF.

X Zhu, D Wang, O Biza, G Su, R Walters, R Platt. **Sample Efficient Grasp Learning Using Equivariant Models.** RSS'22. Link to PDF.

D Klee, O Biza, R Platt. **Graph-Structured Policy Learning for Multi-Goal Manipulation Tasks.** IROS'22. Link to PDF.

O Biza, D Wang, R Platt, JW van de Meent, LLS Wong. **Action Priors for Large Action Spaces in Robotics**. AAMAS'21 (oral). Link to PDF.

O Biza, R Platt. **Online Abstraction with MDP Homomorphisms for Deep Learning**. AAMAS'19 (oral). Link to PDF.

Workshop and Symposium

O Biza, S van Steenkiste, MSM Sajjadi, GF Elsayed, A Mahendran, T Kipf. **Spatial Symmetry in Slot Attention.** NeurIPS'22 Workshop on Symmetry and Geometry in Neural Representations. Link to PDF.

D Klee, O Biza, R Platt, R Walters. **I2I: Image to Icosahedral Projection for SO(3) Object Reasoning from Single-View Images.** NeurIPS'22 Workshop on Symmetry and Geometry in Neural Representations. Link to PDF.

O Biza, R Platt, JW van de Meent, LLS Wong, T Kipf. **Binding Actions to Objects in World Models**. ICLR'22 Workshop on the Elements of Reasoning: Objects, Structure and Causality. Link to PDF.

O Biza, E van der Pol, T Kipf. **The Impact of Negative Sampling on Contrastive Structured World Models**. ICML'21 Workshop: Self-Supervised Learning for Reasoning and Perception. Link to PDF.

O Biza, R Platt, JW van de Meent, LLS Wong. **Learning Discrete State Abstractions With Deep Variational Inference**. AABI'21 (symposium). Link to PDF.

T Rehorek, P Kordik, O Biza, I Povalyev, R Bartyzal, O Podsztavek. **Comparing Offline and Online Evaluation Results of Recommender Systems**. RecSys'18 REVEAL Workshop. Link to PDF.

Working Papers

O Biza, T Kipf, D Klee, R Platt, JW van de Meent, LLS Wong. **Factored World Models for Zero-Shot Generalization in Robotic Manipulation.** Preprint. Link to PDF.

Research Experience

Research Intern, Boston Dynamics AI Institute
May 2023 - Present

I am doing research in 3D robotic manipulation and geometric deep learning.

Student Researcher, Google Research
May 2022 - December 2022

May - September 2022: Full-time, Amsterdam, co-hosted by Aravindh Mahendran and Thomas Kipf.

September 2022 - December 2022: Part-time, remote, hosted by Gamaleldin Fathy Elsayed.

I was part of the Brain team and worked on unsupervised object discovery and scene representation. My focus was on incorporating spatial symmetries into neural slot-based models.

Research Scientist, Czech Technical University in Prague
April 2017 - July 2019

I collaborated with professor Robert Platt from Northeastern University on researching abstraction methods that can bootstrap learning of robotic manipulation tasks. Prior to that, I worked in ShowmaxLab with the goal of merging information contained in images and audio for improved action recognition in videos. I was supervised by professor Pavel Kordik.

Research Intern, Northeastern University
Summer 2018

I worked on a reinforcement learning research project supervised by Robert Platt. The outcome of the internship was the paper Online Abstraction with MDP Homomorphisms for Deep Learning.

Education

PhD in Computer Science, Northeastern University
September 2019 - Present

Khoury College of Computer Sciences.

Supervised by Robert Platt, Lawson L. S. Wong and Jan-Willem van de Meent.

M.S. in Computer Science, Northeastern University
August 2022

Awarded as part of my PhD program. GPA 3.97 / 4.0.

Bc. in Computer Science, Czech Technical University in Prague
July 2016 - May 2019

Graduated with distinction, Dean's award for an exceptional Bachelor's thesis. GPA 3.92 / 4.0.

Thesis: Abstraction in Reinforcement Learning, supervised by Robert Platt (Northeastern University).

Miscellaneous

Teaching

Computational Intelligence, Czech Technical University

Enrollment: summer 2017: 22 students, summer 2018: 26 students.

Teaching assistant and co-lecturer. I gave tutorials on implementing neural networks in Tensorflow for computer vision and language modeling.

Methods of Computational Intelligence, Czech Technical University

Enrollment: winter 2017: 28 students, spring 2017: 45 students, winter 2018: 35 students.

Teaching assistant. I worked on tutorials and consulted students' final projects.

Knowledge Engineering Seminar, Czech Technical University

Enrollment: winter 2018: 16 students, spring 2019: 15 students.

Co-lecturer. I helped pick academic papers and moderated discussions about them.

Reviewing

Reviewer: ICML'23, ICRA'23, NeurIPS'22, ICML'22, AAMAS'22, AAAI'22, ICLR'22.

References

Robert Platt. Associate Professor. Northeastern University, Boston, MA, USA.
Email: `rplatt@ccs.neu.edu`.

Jan-Willem van de Meent. Associate Professor. University of Amsterdam, Netherlands.
Email: `j.w.vandemeent@uva.nl`.

Thomas Kipf. Senior Research Scientist. Google Research, Brain Team. Amsterdam, Netherlands.
Email: `tkipf@google.com`.