Vlad Sobal

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Education

PhD in Data Science, New York University — New York, NY
NYU Center for Data Science, advised by professors Yann LeCun and Kyunghyun Cho — *Sep. 2019 – present*

Working on representation learning, model-based planning, joint-embedding predciting architectures (JEPA).

BSc in Computer Science, University of Warsaw — Warsaw, Poland
Faculty of Mathematics, Informatics, and Mechanics — *Oct. 2015 – May 2019*

Thesis topic: Feature Space Augmentations for Object Classification and Detection.

Publications

- **𝕏-Sample Contrastive Loss: Improving Contrastive Learning with Sample Similarity Graphs**
  Vlad Sobal, Mark Ibrahim, Randall Balestriero, Vivien Cabannes, Diane Bouchacourt, Pietro Astolfi, Kyunghyun Cho, Yann LeCun
  (2024, ArXiV preprint, submitted to ICLR 2025)
  https://arxiv.org/abs/2407.18134

- **Hierarchical World Models as Visual Whole-Body Humanoid Controllers**
  Nicklas Hansen, Jyothir S V, **Vlad Sobal**, Yann LeCun, Xiaolong Wang, Hao Su
  (2024, ArXiV preprint, Submitted to ICLR 2025)
  https://arxiv.org/abs/2405.18418

- **Gradient-based Planning with World Models**
  Jyothir S V, Siddhartha Jalagam, Yann LeCun, **Vlad Sobal**
  (Generative Models for Decision Making Workshop at ICLR 2024)
  https://arxiv.org/abs/2312.17227

- **A cookbook of self-supervised learning**
  Randall Balestriero, Mark Ibrahim, **Vlad Sobal** *et. al.* (contributed a chapter on RL)
  (2023, ArXiV preprint)
  https://arxiv.org/abs/2304.12210

- **Light-weight probing of unsupervised representations for reinforcement learning**
  Wancong Zhang, Anthony GX-Chen, **Vlad Sobal**, Yann LeCun, Nicolas Carion
  (2023, ArXiV preprint, Reinforcement Learning Conference 2024)
  https://arxiv.org/abs/2208.12345

- **Joint embedding predictive architectures focus on slow features**
  Vlad Sobal, Jyothir SV, Siddhartha Jalagam, Nicolas Carion, Kyunghyun Cho, Yann LeCun
  (Self-Supervised Learning - Theory and Practice Workshop, NeurIPS 2022)
  https://arxiv.org/abs/2204.07184

- **Separating the World and Ego Models for Self-Driving**
  Vlad Sobal, Alfredo Canziani, Nicolas Carion, Kyunghyun Cho, Yann LeCun
  (Generalizable Policy Learning in the Physical World Workshop at ICLR 2022)
  https://arxiv.org/abs/2204.07184

Experience

Meta AI Research — October 2022 - October 2024
Visiting Researcher with Mikael Henaff and Yann LeCun — *New York, NY*

- Working on learning representations and world models for robotic manipulation tasks using joint-embedding predictive architectures (JEPAs).

NVIDIA June 2021 - December 2021
Deep Learning Research Intern *Remote*

- Applying joint-embedding methods to pre-train autonomous vehicles perception models.

NVIDIA May 2019 - August 2019
Software Engineering Intern with Autonomous Vehicles Perception team *Santa Clara, CA*

- Contributed to C++ pipeline for intersection bounding box processing.
- Built a model to classify digital traffic signs.

Jane Street Europe July 2018 - September 2018
Software Engineering Intern with Trading Systems team *London, UK*

- Working on Jane Street trading systems' price processing pipeline built with OCaml.

NVIDIA March 2018 - June 2018
Software Engineering Intern with Autonomous Vehicles SDK team *Santa Clara, CA*

- Built a tool to monitor pipeline throughput for autonomous vehicle's sensor data.

NVIDIA October 2017 - March 2018
Software Engineering Intern with GPU Cloud team (NGC) *Santa Clara, CA*

- Contributed to the front-end and back-end of communication system for GPU cluster (Python), making dataset upload up to 10 times faster.

Google July 2017 - October 2017
Software Engineering Intern with Google Ads team *Mountain View, CA*

- Built a logs analysis pipeline for dynamically generated ads using Go.

Google July 2016 - September 2016
Software Engineering Intern with Google Maps for iOS team *Zurich, Switzerland*

- Worked on permission notification system for Timeline feature of iOS app for Google Maps (Objective C).

Service

Reviewer: NeurIPS Goal-Conditioned RL workshop 2023, NeurIPS 2023, ICML 2023, ICLR 2024
Teaching Assistant: NYU Deep Learning class Spring 2021, Spring 2022
Volunteer: ICML 2022