

Andrea Dittadi

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Employment

- Jul 2023–present **Postdoctoral Researcher**
Helmholtz AI, Munich, Germany
- Nov–Dec 2023 **Visiting Researcher**
and Apr 2024 *Mila, Montreal, Canada*
- Jul 2022–Jun 2023 **Postdoctoral Researcher**
KTH, Stockholm, Sweden
- Jun–Sep 2021 **Research Intern**
Amazon, Tübingen, Germany
Out-of-distribution generalization of large vision models in transfer learning.
Supervised by Francesco Locatello and Peter Gehler.
- Sep–Nov 2020 **Research Intern**
Microsoft Research, Cambridge, UK
Generative models for human pose estimation from partial observations.
Supervised by Tom Cashman and Ben Lundell.
- Feb–Aug 2020 **Research Intern**
Max Planck Institute for Intelligent Systems, Tübingen, Germany
Generalization of disentangled representations in robotics.
Supervised by Bernhard Schölkopf and Stefan Bauer.
- 2016–2019 **Research and Teaching Assistant**
Technical University of Denmark, Copenhagen, Denmark
Teaching in: Deep Learning, Artificial Intelligence and Multi-agent Systems, Computationally Hard Problems, Logical Theories for Uncertainty and Learning.

Education

- 2018–2022 **Technical University of Denmark, Copenhagen, Denmark**
PhD in Machine Learning
Probabilistic generative models, representation learning, variational inference.
Supervised by Ole Winther and Thomas Bolander.
- 2015–2017 **Technical University of Denmark, Copenhagen, Denmark**
MSc in Computer Science and Engineering, 12/12
Machine learning, artificial intelligence, algorithms.
Thesis on combining neural networks and automated planning.
- 2014–2017 **University of Padua, Italy**
MSc in Telecommunication Engineering, 110/110 with honors
Signal processing, stochastic processes, communication systems, computer vision.
Selected for T.I.M.E. double degree program at the Technical University of Denmark.
- 2011–2014 **University of Padua, Italy**
BSc in Information Engineering, 110/110 with honors
Maths, physics, computer science, statistics, signal processing.

Publications

24. B. M. G. Nielsen, A. Christensen, [A. Dittadi](#)[†], O. Winther[†]. *DiffEnc: Variational Diffusion with a Learned Encoder*. **ICLR** 2024.
23. A. M. K. Mamaghan, S. Papa, K. H. Johansson, S. Bauer, [A. Dittadi](#). *Exploring the Effectiveness of Object-Centric Representations in Visual Question Answering: Comparative Insights with Foundation Models*. **ICLR Workshop** on Generative Models for Decision Making, 2024.
22. A. Palma, T. Richter, H. Zhang, [A. Dittadi](#), F. Theis. *cellFlow: a generative flow-based model for single-cell count data*. **ICLR Workshop** on Machine Learning for Genomics Explorations, 2024.
21. A. M. K. Mamaghan, [A. Dittadi](#), S. Bauer, F. Quinzan. *Diffusion Based Causal Representation Learning*. **ICML Workshop** on Structured Probabilistic Inference & Generative Modeling, 2023.
20. C. Eastwood*, A. L. Nicolicioiu*, J. von Kügelgen*, A. Kekic, F. Träuble, [A. Dittadi](#), B. Schölkopf. *DCI-ES: An Extended Disentanglement Framework with Connections to Identifiability*. **ICLR** 2023.
19. P. E. Christensen, V. Snæbjarnarson, [A. Dittadi](#), S. Belongie, S. Benaim. *Assessing Neural Network Robustness via Adversarial Pivotal Tuning*. **WACV** 2023 (oral, 2.6%).
18. T. Höppe, A. Mehrjou[†], S. Bauer[†], D. Nielsen[†], [A. Dittadi](#)[†]. *Diffusion Models for Video Prediction and Infilling*. **TMLR** (also **best paper award** at CVEU workshop @ ECCV), 2022.
17. F. Wenzel, [A. Dittadi](#), P. Gehler, C. J. Simon-Gabriel, M. Horn, D. Zietlow, D. Kernert, C. Russell, T. Brox, B. Schiele, B. Schölkopf, F. Locatello. *Assaying Out-Of-Distribution Generalization in Transfer Learning*. **NeurIPS** 2022.
16. [A. Dittadi](#), S. Papa, M. De Vita, B. Schölkopf, O. Winther, F. Locatello. *Generalization and Robustness Implications in Object-Centric Learning*. **ICML** 2022.
15. S. Papa, O. Winther, [A. Dittadi](#). *Inductive Biases for Object-Centric Representations in the Presence of Complex Textures*. **ICML Workshop** on Dynamic Neural Networks (also at UAI Workshop on Causal Representation Learning), 2022.
14. [A. Dittadi](#)*, F. Träuble*, M. Wüthrich, F. Widmaier, P. Gehler, O. Winther, F. Locatello, O. Bachem, B. Schölkopf, S. Bauer. *The Role of Pretrained Representations for the OOD Generalization of Reinforcement Learning Agents*. **ICLR** 2022.
13. S. Bing, [A. Dittadi](#), S. Bauer[†], P. Schwab[†]. *Conditional Generation of Medical Time Series for Extrapolation to Underrepresented Populations*. **PLOS Digital Health**, 2022.
12. D. Chira*, I. Haralampiev*, O. Winther, [A. Dittadi](#)[†], V. Liévin[†]. *Image Super-Resolution With Deep Variational Autoencoders*. **ECCV Workshop** on Advances in Image Manipulation, 2022.
11. Y. Chen, [A. Dittadi](#), F. Träuble, S. Bauer, B. Schölkopf. *Boxhead: A Dataset for Learning Hierarchical Representations*. **NeurIPS Workshop** on Shared Visual Representations in Human & Machine Intelligence, 2021.
10. [A. Dittadi](#), S. Dziadzio, D. Cosker, B. Lundell, T. Cashman, J. Shotton. *Full-Body Motion from a Single Head-Mounted Device: Generating SMPL Poses from Partial Observations*. **ICCV** 2021.
9. F. Träuble, E. Creager, N. Kilbertus, F. Locatello, [A. Dittadi](#), A. Goyal, B. Schölkopf, S. Bauer. *On Disentangled Representations Learned From Correlated Data*. **ICML** 2021 (long oral, 3%).
8. [A. Dittadi](#)*, F. Träuble*, F. Locatello, M. Wüthrich, V. Agrawal, O. Winther, S. Bauer, B. Schölkopf. *On the Transfer of Disentangled Representations in Realistic Settings*. **ICLR** 2021.
7. [A. Dittadi](#)*, F. K. Drachmann*, T. Bolander. *Planning From Pixels in Atari With Learned Symbolic Representations*. **AAAI** 2021.

6. V. Liévin, A. Dittadi, A. Christensen, O. Winther. *Optimal Variance Control of the Score Function Gradient Estimator for Importance Weighted Bounds*. **NeurIPS** 2020.
5. A. Dittadi, O. Winther. *LVAE: Disentangling Location and Appearance*. **NeurIPS Workshop** on Perception as Generative Reasoning, 2019.
4. V. Liévin, A. Dittadi, L. Maaløe, O. Winther. *Towards Hierarchical Discrete Variational Autoencoders*. Symposium on Advances in Approximate Bayesian Inference (**AABI**), 2019.
3. S. Pálsson*, S. Cerri*, A. Dittadi*, K. Van Leemput. *Semi-Supervised Variational Autoencoder for Survival Prediction*. **MICCAI Workshop** on Brain Lesion, 2019.
2. A. Dittadi, T. Bolander, O. Winther. *Learning to Plan from Raw Data in Grid-based Games*. Global Conference on Artificial Intelligence (**GCAI**), 2018.
1. A. Biason, A. Dittadi, M. Zorzi. *Spreading and repetitions in satellite MAC protocols*. IEEE International Conference on Communications (**ICC**), 2016.

*Equal contribution. †Equal advising.

Summer Schools

- Jul 2018 **FoPSS Logic and Learning School**
University of Oxford, UK
- Aug 2016 **Advanced Topics in Machine Learning**
Technical University of Denmark, Copenhagen, Denmark
- Jul 2016 **Regularization Methods for Machine Learning (RegML)**
University of Genoa, Italy

Academic Community

Reviewer for ICLR, ICML, NeurIPS, AAAI, SIGGRAPH, AAMAS, EUMAS, GCAI
Co-organizer of the 2nd Workshop on Current Trends in AI (Copenhagen, Denmark, 2017)

Awards and Scholarships

- 2020 ELLIS PhD Student (nominated by Ole Winther and Bernhard Schölkopf)
- 2019 Otto Mønsted Foundation travel grant for NeurIPS (7500 DKK)
- 2018 PhD scholarship, Technical University of Denmark
- 2015 TIME double degree scholarship
- 2015 Erasmus+ scholarship

Skills

Technical: Python, PyTorch, Tensorflow; past: Java, MATLAB, basic C/C++ and Prolog
Tools: LaTeX, Git
Languages: Italian, English