

# Đorđe Miladinović

## Curriculum Vitæ

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Software Engineer | Machine Learning Researcher | B-permit Swiss Resident

## Education

- Sep'17-Jun'21 **ETH Zürich – PhD in Machine Learning & Computer Science.**  
Thesis: "On Training Deep Generative Models with Latent Variables" with Prof. Joachim M. Buhmann.  
Research areas: Generative modeling of text and images, Representation learning, Deep learning for biology, Causality.
- Sep'13-Jun'16 **ETH Zürich – MS in Computer Science.**  
Thesis: "A Perceptual Analysis Framework for Discovering Anomalies in Humanoid Arm Motions" with Prof. Otmar Hilliges.  
Specialized in software engineering, distributed computing and machine learning.
- Sep'09-Sep'13 **University of Belgrade – BS in Electrical Engineering & Computer Science.**  
Specialized in software/hardware engineering and design.

## Work Experience

- Feb'17-Present **ETH Zürich, Institute for Machine Learning – Research Scientist.**
  - [Python/PyTorch] I led a team of researchers to develop a web platform that uses convolutional neural networks to recognize sleep patterns from brain signals ([sleeplearning.ethz.ch](https://sleeplearning.ethz.ch)). It is used daily by researchers worldwide.
  - [Python/PyTorch] I invented a type of neural network for realistic image synthesis ([github.com/djordjemila/sdn](https://github.com/djordjemila/sdn)).
  - I was actively involved in numerous interdisciplinary collaborations including the following projects:
    - *Zurich Exhalomics* ([hochschulmedizin.uzh.ch/zurich-exhalomics](https://hochschulmedizin.uzh.ch/zurich-exhalomics)) – I led a team of students to develop a tool that automatically calibrates the mass spectrum of human breath, and also a machine-learning algorithm to detect causal relations between different metabolites in the human body and sleep stages (relating metabolism to sleep).
    - *Sleep Loop* ([sleeploop.ch](https://sleeploop.ch)) – I developed an algorithm to recognize human sleep stages from wireless device recordings.
    - *VirtaMed collaboration* ([virtamed.com](https://virtamed.com)) – I developed a machine learning tool that can automatically assess the performance of surgeons on a virtual surgery simulator.
- Sep'18-Dec'18 **Max Planck Institute for Intelligent Systems – Research Scientist.**
  - I worked on causality. I applied causal reasoning to generative models based on deep neural networks.
- Sep'16-Feb'17 **Logitech Europe S.A. Data Science & Advanced Analytics – Software Engineer.**
  - [Python/SQL] I used machine learning to analyze user logs to improve the understanding of product utility.
  - [Java] I used natural language processing algorithms to analyze opinions from Amazon reviews, for product enhancement.
- Jan'16-Sep'16 **Disney Research Zürich, Vision and Sensing Research Group – Research Scientist.**
  - [Python/C++/Matlab/Blender/HTML/CSS] I designed an algorithm to identify mechanical wear in Disney robots (animatronics). A machine-learning algorithm was employed to provide the human-like robot-degradation assessment.

## Skills

General	Computer Vision, Natural Language Processing, Deep Learning, Algorithms & Data Structures, Operating Systems
Proficient in	Python, PyTorch, C, C++, Java, Matlab, Latex, Bash, HTML, CSS, Javascript
Experienced in	Hadoop MapReduce, C#, Javascript, NodeJS, Ruby on Rails, Torch, SQL, Pascal
Frameworks	Linux, Microsoft Windows, Microsoft Office, Git, Docker, OpenCV, Pandas, Scikit-learn, Django, Kubernetes

## Languages

Serbo-Croatian (Native), English (Fluent), German (B1), Spanish (Beginner)

## Academic Activities

- Dec'19 NeurIPS 2019 – I co-organized the "Disentanglement Challenge" ([bit.ly/36bTD4W](https://bit.ly/36bTD4W))
- 2017-2019 Reviewer at NeurIPS, ICML, ICLR

## Selected Publications (full list is available at <https://djordjemila.github.io/#publications>)

- [1] **Đorđe Miladinović**, Aleksandar Stanić, Stefan Bauer, Jürgen Schmidhuber & Joachim M. Buhmann  
*Spatial Dependency Networks: Neural Layers for Improved Generative Image Modeling*  
International Conference on Learning Representations, ICLR 2021
- [2] Raphael Suter, **Đorđe Miladinović**, Stefan Bauer & Bernhard Schölkopf  
*Robustly Disentangled Causal Mechanisms: Validating Deep Representations for Interventional Robustness*  
International Conference on Machine Learning, ICML 2019
- [3] **Đorđe Miladinović** et al.  
*SPINDLE: End-to-end learning from EEG/EMG to extrapolate animal sleep scoring across experimental settings, labs and species*, PloS Computational Biology 2019