Darjan Salaj

Deep & machine learning researcher, consultant, engineer
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StackOverflow | GitHub | website

PEER-REVIEWED PUBLICATIONS (*: equal contributions)

G Bellec*, **D Salaj***, A Subramoney*, R Legenstein, W Maass. *Long short-term memory and learning-to-learn in networks of spiking neurons.* Advances in Neural Information Processing Systems (NeurIPS) 2018 (URL)

G Bellec*, F Scherr*, E Hajek, **D Salaj**, A Subramoney, R Legenstein, W Maass.*Eligibility traces provide a data-inspired alternative to backpropagation through time.* NeurIPS 2019 Workshop: Real neurons and hidden units. 2019. (URL)

A Subramoney*, G Bellec*, F Scherr*, E Hajek, **D Salaj**, R Legenstein, W Maass. *Slow processes of neurons enable a biologically plausible approximation to policy gradient.* NeurIPS 2019 Workshop: Biological and artificial Reinforcement Learning. 2019. (URL)

G Bellec*, F Scherr*, A Subramoney, E Hajek, **D Salaj**, R Legenstein, W Maass. *A solution to the learning dilemma for recurrent networks of spiking neurons.* under review. (URL)

G Bellec, F Scherr, E Hajek, **D Salaj**, R Legenstein, W Maass. *Biologically inspired alternatives to backpropagation through time for learning in recurrent neural nets.* (URL)

EXPERIENCE

Deep Learning Consulting & Dev, Automotive Industry — *Virtual Vehicle*

September 2018 - PRESENT (recommendation letter on request from Dr. Rubesa-Zrim)

Delivered high accuracy battery capacity (state of health) predicting model. Independently analyzed the available data, planned approach, and delivered the codebase with report and presentation. Significantly increased the performance of the reinforcement learning model through consulting and analysis of existing codebase.

Research, Deep & Machine Learning — *Institute of Theoretical Computer Science @ TU Graz*

July 2017 - PRESENT (recommendation letter on request from Prof. Maass, Prof. Legenstein)

Developed computational models for learning and memory setting new state-of-the-art in the domain of recurrent spiking neural networks. Contributed to several papers accepted in the most competitive machine learning conference (NeurIPS). Extensive experience with the TensorFlow framework and solving temporal and time-series tasks. Developed models compatible with novel neuromorphic hardware (Intel Loihi, SpiNNaker).

Machine Learning Project, Learning to Learn — *Student Project @ TU Graz*

March 2017 - Jun 2017

Independently contributed to the gradient-free optimization framework L2L (URL) that was primarily used by different groups at the Jülich Supercomputing Centre.

Full-stack development, Online marketplace — *mything GmbH*

December 2015 - April 2018

As part of the core team, I developed a significant part of the backend for the 3D printing web marketplace. Advanced features included online pricing computation based on delivery and 3D model volume-based printing cost computation, and 3D model validation.

Pocket Code, 2014 - 2015, Institute of Software Technology, Prof. Wolfgang Slany, (URL), a google featured project (URL)

Web Development, 2012 - 2013, Winning Management Seminare GmbH, Dr. Michael Reinprecht, (URL)

TEACHING

Teaching assistant, Reinforcement Learning Seminar, 2019 - 2020, Institute of Theoretical Computer Science, Prof. Robert Legenstein

Teaching assistant, Human-Computer Interaction, 2014 - 2015, Institute for Interactive Systems and Data Science, Prof. Keith Andrews

EDUCATION

Ph.D., Machine Learning / Computational Neuroscience — *Prof. Wolfgang Maass*

2018 - PRESENT, Graz University of Technology

MSc, with distinction, Computer Science, *Prof. Wolfgang Maass*

April 2018, Graz University of Technology

BSc, Computer Science, *Prof. Wolfgang Slany*

September 2015, Graz University of Technology

EVENTS

- 2019 Human Brain Project workshop, University of Hertfordshire
- 2019 Neuromorphic group workshop, Fürberg
- 2019 Intel INRC workshop, Graz
- 2018 Human Brain Project Summit, Maastricht Netherlands
- 2018 Intel INRC workshop, Reykjavik Iceland
- 2018 Learning to Learn workshop, Fürberg
- 2018 Human Brain Project Neuromorphic group workshop, Fürberg

SKILLS (significant experience with)

- Machine learning, Deep learning, TensorFlow, Recurrent Neural Networks, Convolutional Neural Networks, Numpy, pandas, Matplotlib, time-series, temporal tasks, Python, Jupyter
- Git, Continous Integration (CI), Continous Deployment (CD), Jenkins, REST API, vim, bash, Linux, OOP, slurm, HPC, tmux, Agile, Scrum, Test Driven Development (TDD)
- PostgreSQL, Redis, web frameworks (vue.js, Django, Flask, node.js)

LANGUAGE

- English: Native or bilingual proficiency
- German: Professional proficiency