

Dmitrii Zendrikov

Curriculum vitae

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Born: 05.05.1994, Moscow

Nationality: RU

Marital status: single

Education

- 2017 – Now **Institute of Neuroinformatics, UZH and ETH Zurich**, Zurich, Switzerland
Program: Neuroscience
Doctoral Student, Supervisor: *Prof. Dr. Giacomo Indiveri*
Thesis title: "Principles of Robust Neural Computation Through the Lens of Analog Neuromorphic Hardware"
- 2015 – 2017 **Moscow Institute of Physics and Technology (MIPT)**, Dolgoprudniy, Russia
Faculty of Nano-, Bio-, Informational and Cognitive Technologies
Program: Applied Mathematics and Physics
MSc student, Supervisor: *Dr. Alexander Paraskevov*
Thesis title: "Modeling and analysis of the regime of repeating network spikes in neuronal cultures"
- 2011 – 2015 **Moscow Institute of Physics and Technology (MIPT)**, Dolgoprudniy, Russia
Faculty of Nano-, Bio-, Informational and Cognitive Technologies
Program: Applied Mathematics and Physics
BSc student, Supervisor: *Dr. Alexander Paraskevov*
Thesis title: "Modeling the spontaneous synchronization of spiking activity in neuronal networks with relaxational synaptic plasticity"

Teaching Experience

- 2022-2024 **Teaching Assistant**, Institute of Neuroinformatics, UZH and ETH Zurich
DYNAP-SE1 neuromorphic chip demonstration as single lectures within the Neuromorphic Intelligence class
- 2019 **Teaching Assistant**, Institute of Neuroinformatics, UZH and ETH Zurich
Neuromorphic Engineering course

Employment

- 2017 – Now **Institute of Neuroinformatics, UZH and ETH Zurich**, Student Researcher
Key technical achievements:
- an automated measurement and calibration software for an analog neuromorphic chip
 - interactive GUI modules for output visualization and control of a neuromorphic chip
 - an external software plasticity module of a neuromorphic chip enabling learning
 - a class in a Teili library used to simulate on-chip spiking networks, deployed on PYPI

2013 – 2017 **National Research Center “Kurchatov Institute”**, Assistant Researcher

Key technical achievements:

- a custom spiking network simulator NeuroSim-TM with LIF-neuron model and short-term synaptic plasticity for 2D and 3D networks of point neurons
- spatial spiking activity visualization tool Spatial Activity Monitor for 2D and 3D point neuron networks

Skills

Programming Python, C/C++ (with Qt Framework), MatLab

Languages Russian (native), English (fluent)

Schools, Courses and Talks

Apr-May 2022 **CapoCaccia 2022 Workshop** (presenter), DYNAP-SE1 neuromorphic chip hands-on experience

Mar 2021 **NICE 2021 Workshop** (presenter), DYNAP-SE1 neuromorphic chip tutorial: interactive demo

Aug-Sep 2016 **INCF Course “Introduction to Neuroinformatics”** (participant), Reading, United Kingdom

Oct 2015 **BCF/NWG Course “Analysis and Models in Neurophysiology”** (participant), Bernstein Center Freiburg, Germany

Research interests

neuromorphic systems, spike-based learning, temporal coding, network dynamics

Hobbies and personal skills

Music (drummer; technical director of live music events)

Hang-gliding (Level 3 IPPI license)

Selected Publications

- 1 **D Zendrikov**, S Solinas, G Indiveri, *Brain-inspired methods for achieving robust computation in heterogeneous mixed-signal neuromorphic processing systems*. Neuromorphic Computing and Engineering 3 (3), 034002, 2023
- 2 J Büchel, **D Zendrikov**, S Solinas, G Indiveri, DR Muir. *Supervised training of spiking neural networks for robust deployment on mixed-signal neuromorphic processors*. Scientific reports 11 (1), 23376, 2021
- 3 I Blakowski, **D Zendrikov**, C Capone, G Indiveri. *Neuromorphic dreaming: A pathway to efficient learning in artificial agents*. Proceedings of the 20th COSYNE conference, 2024.
- 4 AV Paraskevov, **DK Zendrikov**. *A spatially resolved network spike in model neuronal cultures reveals nucleation centers, circular traveling waves and drifting spiral waves*. Physical Biology 14 (2), 026003, 2017

- 5 A Linares-Barranco, E Piñero-Fuentes, S Canas-Moreno, A Rios-Navarro, Maryada, C Wu, J Zhao, **D Zendrikov**, G Indiveri. *Towards hardware Implementation of WTA for CPG-based control of a Spiking Robotic Arm*. 2022 IEEE International Symposium on Circuits and Systems (ISCAS), 1057-1061, 2022
- 6 J Büchel, **D Zendrikov**, S Solinas, G Indiveri, DR Muir. *Supervised training of spiking neural networks for robust deployment on mixed-signal neuromorphic processors*. Scientific reports 11 (1), 23376, 2021
- 7 **DK Zendrikov** AV Paraskevov. *Emergent population activity in metric-free and metric networks of neurons with stochastic spontaneous spikes and dynamic synapses*. Neurocomputing 461, 727-742, 2021
- 8 M Milde, A Renner, R Krause, AM Whatley, S Solinas, **D Zendrikov**, N Risi, M Rasetto, K Burelo, VRC Leite. *teili: A toolbox for building and testing neural algorithms and computational primitives using spiking neurons*. Simulation software, Institute of Neuroinformatics, University of Zurich and ETH Zurich, 2018