GEORGE SARANTOGLOU

BIRTH DATE
29/12/1992

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EDUCATION

PHD IN NEUROMORPHIC PHOTONICS
Department of Information and Communication Systems Engineering, University of The Aegean, Samos

Thesis: "Study of Photonic Neuromorphic Devices Based on Spiking Quantum Dot Lasers and Reconfigurable Photonic Synapses for Signal Processing Applications"

January 2019 – July 2024

MASTER OF SCIENCE IN MICROELECTRONICS
Department of Informatics and Telecommunications, University of Athens, Athens

Thesis: "Study of Non-Linear Dynamics in Quantum Dot Lasers for Neuromorphic Processing"

October 2016 – June 2022

BACHELOR OF SCIENCE IN ELECTRICAL ENGINEERING
Department of Electrical and Computer Engineering, University of Patras, Patras

Expertise: Systems of Automatic Control

Thesis: "Manipulation of Micro-objects Using Electrostatic Fields"

September 2010 - October 2016

INTERNATIONAL/NATIONAL RESEARCH PROJECTS

(2019-2021) GR - ELIDEK - NEBULA (Neuromorphic Processor Based on Quantum-Dot Lasers)
Associate Researcher

(2020-2023) H2020 – (ICT) NEOTERIC PROJECT (Neuromorphic Reconfigurable Integrated Photonic Circuits as Artificial Image Processor)
Associate Researcher

(2023-Today) HORIZON EUROPE PROMETHEUS (Programmable Integrated Photonic and Quantum Networks for High-Speed Imaging, Communications and Security Applications)

Associate /Senior Researcher

(2024 – Today) GR – ELIDEK – QUASAR (Quantum and neUromorphic systems for cyber phySicAl secuRity)
Senior Researcher

TEACHING EXPERIENCE

UNIVERSITY OF THE AEGEAN
Dept. Information & Communication Systems Engineering
(2021 – 2022) Teaching Assistant: Optical Communications Lab

UNIVERSITY OF WEST ATTICA
Biomedical Engineering Department
(2024-Today) Adjunct Lecturer: Introduction to Robotics, Computational Intelligence Hybrid Systems

PUBLICATIONS IN IN PEER-REVIEWED INTERNATIONAL JOURNALS

- Sozos, K., Da Ros, F., Yankov, M. P., **Sarantoglou, G**., Deligiannidis, S., Mesaritakis, C., & Bogris, A. (2024). Experimental Investigation of a Recurrent Optical Spectrum Slicing Receiver for Intensity Modulation/Direct Detection systems using Programmable Photonics. Journal of Lightwave Technology.
- G. Sarantoglou, A. Bogris and C. Mesaritakis, "All-Optical, Reconfigurable, and Power Independent Neural Activation Function by Means of Phase Modulation," in IEEE Journal of Quantum Electronics, vol. 60, no. 5, pp. 1-6, Oct. 2024, Art no. 8700206, doi: 10.1109/JQE.2024.3437353
- Skontranis, M., Sarantoglou, G., Sozos, K., Kamalakis, T., Mesaritakis, C., & Bogris, A. (2023). Multimode Fabry-Perot laser as a reservoir computing and extreme learning machine photonic accelerator. **Neuromorphic Computing and Engineering,** 3(4), 044003.
- Tsirigotis, A., Sarantoglou, G., Skontranis, M., Deligiannidis, S., Sozos, K., Tsilikas, G., ... & Mesaritakis, C. (2023). Unconventional Integrated Photonic Accelerators for High Throughput Convolutional Neural Networks. **Intelligent Computing.**
- Sozos, K., Deligiannidis, S., Sarantoglou, G., Mesaritakis, C., & Bogris, A. (2023). Recurrent Neural Networks and

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Recurrent Optical Spectrum Slicers as Equalizers in High Symbol Rate Optical Transmission Systems. **Journal of Lightwave Technology**.

- Sozos, K., Bogris, A., Bienstman, P., Sarantoglou, G., Deligiannidis, S., & Mesaritakis, C. (2022). High-speed photonic neuromorphic computing using recurrent optical spectrum slicing neural networks. **Communications Engineering**, 1(1), 24.

- Skontranis, M., Sarantoglou, G., Bogris, A., & Mesaritakis, C. (2022). Time-delayed reservoir computing based on a dual-waveband quantum-dot spin polarized vertical cavity surface-emitting laser. **Optical Materials Express**, 12(10), 4047-4060.

- Sozos, K., Bogris, A., Bienstman, P., **Sarantoglou, G**., Deligiannidis, S., & Mesaritakis, C. (2022). High-speed photonic neuromorphic computing using recurrent optical spectrum slicing neural networks. **Communications Engineering**, 1(1), 24.

- Skontranis, M., **Sarantoglou, G.**, Bogris, A., & Mesaritakis, C. (2022). Time-delayed reservoir computing based on a dual-waveband quantum-dot spin polarized vertical cavity surface-emitting laser. **Optical Materials Express**, 12(10), 4047-4060.

- Sarantoglou, G., Bogris, A., Mesaritakis, C., & Theodoridis, S. (2022). Bayesian photonic accelerators for energy efficient and noise robust neural processing. **IEEE Journal of Selected Topics in Quantum Electronics**, 28(6), 1-10.

- Sarantoglou, G., Skontranis, M., Bogris, A., & Mesaritakis, C. (2021). Experimental study of neuromorphic node based on a multiwaveband emitting two-section quantum dot laser. **Photonics Research**, 9(4), B87-B95.

- Skontranis, M., Sarantoglou, G., Deligiannidis, S., Bogris, A., & Mesaritakis, C. (2021). Time-multiplexed spiking convolutional neural network based on VCSELs for unsupervised image classification. **Applied Sciences**, 11(4), 1383.

- Sarantoglou, G., Skontranis, M., & Mesaritakis, C. (2019). All optical integrate and fire neuromorphic node based on single section quantum dot laser. **IEEE Journal of Selected Topics in Quantum Electronics**, 26(5), 1-10.

- **Sarantoglou, G**., Skontranis, M., & Mesaritakis, C. (2019). All optical integrate and fire neuromorphic node based on single section quantum dot laser. **IEEE Journal of Selected Topics in Quantum Electronics**, 26(5), 1-10.

PUBLICATIONS IN PEER-REVIEWED INTERNATIONAL CONFERENCES

- Bogris, A., Sozos, K., Sarantoglou, G., Deligiannidis, S., & Mesaritakis, C. (2023, July). Neuromorphic computing by means of recurrent spectrum slicing for next generation high baud rate transmission systems. In 2023 **IEEE Photonics Society Summer Topicals Meeting Series** (SUM) (pp. 1-2). IEEE.

- Bogris, A., Sozos, K., Deligiannidis, S., Sarantoglou, G., & Mesaritakis, C. (2022, September). Machine Learning and Neuromorphic Computing Approaches for the mitigation of transmission impairments in high baud rate transmission systems. **In European Conference and Exhibition on Optical Communication** (pp. Th2C-5). Optica Publishing Group.

- Skontranis, M., Sarantoglou, G., Bogris, A., & Mesaritakis, C. (2022, September). Spectro-temporally Multiplexed Reservoir Computing Based on a Multimode Fabry Perot Laser. **In European Conference and Exhibition on Optical Communication** (pp. Tu5-73). Optica Publishing

- Mesaritakis, C., Sarantoglou, G., Theodoridis, S., & Bogris, A. (2022, July). Bayesian Training in Photonic Neural Meshes. In 2022 **IEEE Workshop on Complexity in Engineering (COMPENG)** (pp. 1-5). IEEE.

- Sarantoglou, G., Sozos, K., Kamalakis, T., Mesaritakis, C., & Bogris, A. (2022, March). Experimental demonstration of an extreme learning machine based on Fabry Perot lasers for parallel neuromorphic processing. In **Optical Fiber Communication Conference** (pp. M1G-3). Optica Publishing Group.

- Skontranis, M., Sarantoglou, G., Bogris, A., & Mesaritakis, C. (2021, July). Photonic Spiking Convolutional Neural Networks for High-Speed Image Processing-Note: Subtitles are not captured in Xplore and should not be used. In 2021 **IEEE Photonics Society Summer Topicals Meeting Series** (SUM) (pp. 1-2). IEEE.

- Sarantoglou, G., Skontranis, M., Bogris, A., & Mesaritakis, C. (2020, December). Resonate and Fire Neuromorphic Node based on two-section Quantum Dot Laser with multi-waveband dynamics. In 2020 **European Conference on Optical Communications (ECOC)** (pp. 1-4).

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- Skontranis, M., Sarantoglou, G., Deligiannidis, S., Bogris, A., & Mesaritakis, C. (2020, December). Unsupervised Image Classification Through Time-Multiplexed Photonic Multi-Layer Spiking Convolutional Neural Network. In 2020 **European Conference on Optical Communications** (ECOC) (pp. 1-4). IEEE.
- Mesaritakis, C., Skontranis, M., Sarantoglou, G., & Bogris, A. (2020, March). Micro-ring-resonator based passive photonic spike-time-dependent-plasticity scheme for unsupervised learning in optical neural networks. In 2020 **Optical Fiber Communications Conference and Exhibition (OFC)** (pp. 1-3). IEEE.
- Sarantoglou, G., Skontranis, M., Bogris, A., & Mesaritakis, C. (2020, March). Temporal resolution enhancement in quantum-dot laser neurons due to ground state quenching effects. In 2020 **Optical Fiber Communications Conference and Exhibition (OFC)** (pp. 1-3). IEEE.
- Skontranis, M., Sarantoglou, G., & Mesaritakis, C. (2019, June). Inhibitory Integrate and Fire Neuron based on Quantum-Dot Intra-Band Transitions in a Semiconductor Laser. In the **European Conference on Lasers and Electro-Optics** (p. jsi_p_7). Optica Publishing Group.
- Skontranis, M., Sarantoglou, G., & Mesaritakis, C. (2019, May). All-optical Inhibitory Integrate and Fire Neuron based on a Single-Section Quantum-Dot Semiconductor Laser. **In CLEO: Science and Innovations** (pp. JTu2A-74). Optica Publishing Group.
- Sarantoglou, G., Kritikou, G., Aspragathos, N., & Tzes, A. (2017, July). Algorithm for parallel microparts manipulation with electrostatic fields. In 2017 25th **Mediterranean Conference on Control and Automation (MED)** (pp. 1410-1415). IEEE.