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Σπουδές

Διδακτορικό Δίπλωμα, Τμήμα Μηχανικών Πληροφορικής και Υπολογιστών,
Πανεπιστήμιο Δυτικής Αττικής
Τίτλος: «Νευρομορφικές Υπολογιστικές Τεχνικές σε Εφαρμογές
Οπτικών Επικοινωνιών και Επεξεργασίας Εικόνας»
Επιβλέπων: Αντώνης Μπόγρης **2020-2024**

Σύνδεσμος EKT: <http://hdl.handle.net/10442/hedi/58111>

ΜΔΕ Μικροσυστήματα και Νανοδιατάξεις,
Εθνικό Μετσόβιο Πολυτεχνείο
Διπλωματική εργασία: «Ιδιότητες αυτό-οργάνωσης αμφίφιλων
συμπολυμερών με ισχυρά κρυσταλλικές συνιστώσες»
Επιβλέπων: Απόστολος Κυρίτσης **2019-2020**

Πτυχίο Φυσικής, Πανεπιστήμιο Πατρών
Πτυχιακή εργασία: «Προσρόφηση συμπολυμερών σε
νανοπορώδεις μεμβράβες»
Επιβλέπων: Δημήτρης Αναστασόπουλος **2012-2018**

Συμμετοχή σε Ερευνητικά Προγράμματα

Horizon Europe QPIC1550 project (No 101135785) **2024-2025**

Horizon Europe PROMETHEUS project (No 101070195). **2022-2025**

H.F.R.I. Research Projects to support Faculty Members & Researchers:
NOOK project (No 2901) **2022-2025**

EU H2020 NEoteRIC project (No 871330) **2020-2023**

H.F.R.I. Research Projects to support Post-Doctoral Researchers:
NEBULA project **2020-2021**

Δημοσιεύσεις σε Διεθνή Επιστημονικά Περιοδικά

1. K. Sozos, C. Mesaritakis, and A. Bogris, "Reservoir Computing Based on Mutually Injected Phase Modulated Semiconductor Lasers as a Monolithic Integrated Hardware Accelerator," **IEEE Journal of Quantum Electronics**, vol. 57, no. 5, 2021, <https://doi.org/10.1109/JQE.2021.3104855>.
2. K. Sozos, A. Bogris, P. Bienstman, G. Sarantoglou, S. Deligiannidis, and C. Mesaritakis, "High-speed photonic neuromorphic computing using recurrent optical spectrum slicing neural networks," **Nature Communications Engineering**, vol. 1, no. 1, p. 24, Oct. 2022, <https://doi.org/10.1038/s44172-022-00024-5>
3. K. Sozos, S. Deligiannidis, C. Mesaritakis, and A. Bogris, "Self-Coherent Receiver Based on a Recurrent Optical Spectrum Slicing Neuromorphic Accelerator," (Invited) **IEEE J. Lightwave Technol.**, pp. 1–9, 2023, <https://doi.org/10.1109/JLT.2023.3235278>.
4. K. Sozos, S. Deligiannidis, G. Sarantoglou, C. Mesaritakis, and A. Bogris, "Recurrent Neural Networks and Recurrent Optical Spectrum Slicers as Equalizers in High Symbol Rate Optical Transmission Systems," **IEEE J. Lightwave Technol.**, pp. 1–14, 2023, <https://doi.org/10.1109/JLT.2023.3282999>.
5. K. Sozos et al., "Experimental Investigation of a Recurrent Optical Spectrum Slicing Receiver for Intensity Modulation/Direct Detection systems using Programmable Photonics," **J. Lightwave Technol.**, pp. 1–9, 2024, <https://doi.org/10.1109/JLT.2024.3430489>.
6. K. Sozos, S. Deligiannidis, C. Mesaritakis, and A. Bogris, "Unconventional Computing Based on Four Wave Mixing in Highly Nonlinear Waveguides," **IEEE J. Quantum Electron.**, vol. 60, no. 4, pp. 1–6, Aug. 2024, <https://doi.org/10.1109/JQE.2024.3405826>.
7. S. Deligiannidis, K. Bottrill, K. Sozos, C. Mesaritakis, P. Petropoulos, and A. Bogris, "Multichannel Nonlinear Equalization in Coherent WDM Systems based on Bi-directional Recurrent Neural Networks," **IEEE J. Lightwave Technol.**, pp. 1–9, 2023, <https://doi.org/10.1109/JLT.2023.3318559>.
8. Aris Tsirigotis, George Sarantoglou, Menelaos Skontranis, Stavros Deligiannidis, Kostas Sozos, Giannis Tsilikas, Dimitris Dermanis, Adonis Bogris, Charis Mesaritakis., "Unconventional Integrated Photonic Accelerators for High-Throughput Convolutional Neural Networks," **SPJ Intelligent Computing**, vol. 2, p. 0032, Jan. 2023, <https://doi.org/10.34133/icomputing.0032>.
9. Menelaos Skontranis, George Sarantoglou, Kostas Sozos et al, "Multimode Fabry-Perot laser as a reservoir computing and extreme learning machine photonic accelerator" 2023 **Neuromorph. Comput. Eng.** 3, <https://doi.org/10.1088/2634-4386/ad025b>

Δημοσιεύσεις σε Διεθνή Επιστημονικά Συνέδρια

1. C. Mesaritakis, K. Sozos, D. Dermanis, and A. Bogris, "Spatial Photonic Reservoir Computing based on Non-Linear Phase-to-Amplitude Conversion in Micro-Ring Resonators," in **Optical Fiber Communication Conference (OFC)** 2021, Washington, D.C.: OSA, 2021, p. Tu1H.2. <https://doi.org/10.1364/OFC.2021.Tu1H.2>.
2. K. Sozos, C. Mesaritakis and A. Bogris, "Reservoir Computing based on Mutually Injected Phase Modulated Lasers: A monolithic integration approach suitable for short-reach communication systems," 2021 **Optical Fiber Communications Conference and Exhibition (OFC)**, San Francisco, USA, 2021, pp. 1-3. <https://doi.org/10.1364/OFC.2021.W6A.4>

3. K. Sozos, A. Bogris, P. Bienstman, and C. Mesaritakis, "Photonic Reservoir Computing based on Optical Filters in a Loop as a High Performance and Low-Power Consumption Equalizer for 100 Gbaud Direct Detection Systems," in **2021 European Conference on Optical Communication (ECOC)**, IEEE, Sep. 2021, pp. 1–4, <https://doi.org/10.1109/ECOC52684.2021.9606123>.
4. G. Sarantoglou, K. Sozos, T. Kamalakis, C. Mesaritakis, and A. Bogris, "Experimental demonstration of an extreme learning machine based on Fabry Perot lasers for parallel neuromorphic processing," in **2022 Optical Fiber Communications Conference and Exhibition, OFC 2022 - Proceedings**, 2022. <https://opg.optica.org/abstract.cfm?uri=OFC-2022-M1G.3>
5. A. Bogris, K. Sozos, S. Deligiannidis, G. Sarantoglou and C. Mesaritakis, "Machine Learning and Neuromorphic Computing Approaches for the mitigation of transmission impairments in high baud rate transmission systems," **2022 European Conference on Optical Communication (ECOC)**, Basel, Switzerland, 2022, pp. 1-4. <https://opg.optica.org/abstract.cfm?uri=ECEOC-2022-Th2C.5>
6. Tsigotis, I. Tsilikas, K. Sozos, A. Bogris, and C. Mesaritakis, "Filter-based photonic reservoir computing as a key-enabling platform for all-optical, high-speed processing of time-stretched images and telecom data," in **AI and Optical Data Sciences III**, K. Kitayama and B. Jalali, Eds., SPIE, Mar. 2022, p. 50, <https://doi.org/10.1117/12.2607438>.
7. Bogris, K. Sozos, G. Sarantoglou, S. Deligiannidis, and C. Mesaritakis, "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)**, Sicily, Italy: IEEE, Jul. 2023, pp. 1–2, <https://doi.org/10.1109/SUM57928.2023.10224454>.
8. K. Sozos, S. Deligiannidis, C. Mesaritakis, and A. Bogris, "Unconventional Computing based on Four Wave Mixing in Highly Nonlinear Media," in **Conference on Lasers and Electro-Optics/Europe (CLEO/Europe 2023) and European Quantum Electronics Conference (EQEC 2023)**, paper jsiii_1_1. https://opg.optica.org/abstract.cfm?uri=EQEC-2023-jsiii_1_1
9. A. Tsigotis, I. Tsilikas, K. Sozos, A. Bogris, and C. Mesaritakis, "Photonic Neuromorphic Accelerator Combined with an Event-Based Neuromorphic Camera for High-Speed Object Classification," in **Conference on Lasers and Electro-Optics/Europe (CLEO/Europe 2023) and European Quantum Electronics Conference (EQEC 2023)**, https://opg.optica.org/abstract.cfm?uri=eqec-2023-jsiii_3_4
10. K. Sozos, A. Francesco Da Ros, Metodi Yankov, Stavros Deligiannidis, George Sarantoglou, Charis Mesaritakis, Adonis Bogris, "Experimental Investigation of a M-QAM Receiver Based on Recurrent Optical Spectrum Slicing and Direct Detection", in **2024 European Conference on Optical Communication (ECOC)**, IEEE, Sep. 2024
11. K. Sozos, A. Francesco Da Ros, Metodi Yankov, Stavros Deligiannidis, George Sarantoglou, Charis Mesaritakis, Adonis Bogris, "Recurrent Optical Spectrum Slicing Receiver for Power Fading Mitigation in Highly Dispersive Links using Programmable Photonics," **2024 IEEE Photonics Conference (IPC)**, Rome, Italy, 2024, pp. 1-2, <https://doi.org/10.1109/IPC60965.2024.10799740>.

Ερευνητικά Ενδιαφέροντα

Φωτονική Νευρομορφική Υπολογιστική
Κβαντικοί και Φωτονικοί Αισθητήρες και Μετρολογία
Οπτικές Επικοινωνίες
Επεξεργασία σήματος

