



ΤΜΗΜΑ ΔΑΣΟΛΟΓΙΑΣ ΚΑΙ ΔΙΑΧΕΙΡΙΣΗΣ ΠΕΡΙΒΑΛΛΟΝΤΟΣ ΚΑΙ ΦΥΣΙΚΩΝ ΠΟΡΩΝ
ΣΧΟΛΗ ΕΠΙΣΤΗΜΩΝ ΓΕΩΠΟΝΙΑΣ ΚΑΙ ΔΑΣΟΛΟΓΙΑΣ
ΔΗΜΟΚΡΙΤΕΙΟ ΠΑΝΕΠΙΣΤΗΜΙΟ ΘΡΑΚΗΣ
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«Τεχνολογίες Πληροφορικής και Διαδικτύου»
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Οι φοιτητές που παρακολουθούν το μάθημα ενθαρρύνονται να εκπονήσουν εργασίες στα πλαίσια έξι κρίσιμων παγκόσμιων περιβαλλοντικών προκλήσεων:

- κλιματική αλλαγή,
- βιοποικιλότητα και διατήρηση,
- υγιείς ωκεανοί,
- ασφάλεια των υδάτινων πόρων,
- καθαρός αέρας,
- χωροκατακτητικά ξένα είδη,
- προσαρμοστικότητα στα καιρικά φαινόμενα και στις καταστροφές.

Η παρακάτω λίστα περιλαμβάνει ενδεικτικές επιστημονικές εργασίες οι οποίες εκπονήθηκαν από το προσωπικό του εργαστηρίου και αναφέρονται σε σχετικά περιβαλλοντικά προβλήματα:

1. Anezakis, V., Mallinis, G., Iliadis, L., Demertzis, K., 2018. Soft computing forecasting of cardiovascular and respiratory incidents based on climate change scenarios, in: 2018 IEEE Conference on Evolving and Adaptive Intelligent Systems (EAIS). Presented at the 2018 IEEE Conference on Evolving and Adaptive Intelligent Systems (EAIS), pp. 1–8. <https://doi.org/10.1109/EAIS.2018.8397174>
2. Anezakis, V.-D., Demertzis, K., Iliadis, L., 2018a. Classifying with fuzzy chi-square test: The case of invasive species. AIP Conference Proceedings 1978, 290003. <https://doi.org/10/gdtm5q>
3. Anezakis, V.-D., Demertzis, K., Iliadis, L., Spartalis, S., 2018b. Hybrid intelligent modeling of wild fires risk. Evolving Systems 9, 267–283. <https://doi.org/10/gdp863>
4. Anezakis, V.-D., Demertzis, K., Iliadis, L., Spartalis, S., 2016a. A Hybrid Soft Computing Approach Producing Robust Forest Fire Risk Indices, in: Iliadis, L., Maglogiannis, I. (Eds.), Artificial Intelligence Applications and Innovations, IFIP Advances in Information and Communication Technology. Springer International Publishing, pp. 191–203.
5. Anezakis, V.-D., Dermetzis, K., Iliadis, L., Spartalis, S., 2016b. Fuzzy Cognitive Maps for Long-Term Prognosis of the Evolution of Atmospheric Pollution, Based on Climate Change Scenarios: The Case of Athens, in: Nguyen, N.-T., Iliadis, L., Manolopoulos, Y., Trawiński, B. (Eds.), Computational Collective Intelligence, Lecture Notes in Computer Science. Springer International Publishing, pp. 175–186.

6. Anezakis, V.-D., Iliadis, L., Demertzis, K., Mallinis, G., 2017. Hybrid Soft Computing Analytics of Cardiorespiratory Morbidity and Mortality Risk Due to Air Pollution, in: Dokas, I.M., Bellamine-Ben Saoud, N., Dugdale, J., Díaz, P. (Eds.), *Information Systems for Crisis Response and Management in Mediterranean Countries*, Lecture Notes in Business Information Processing. Springer International Publishing, pp. 87–105.
7. Bougoudis, I., Demertzis, K., Iliadis, L., 2016a. Fast and low cost prediction of extreme air pollution values with hybrid unsupervised learning. *Integrated Computer-Aided Engineering* 23, 115–127. <https://doi.org/10/f8dt4t>
8. Bougoudis, I., Demertzis, K., Iliadis, L., 2016b. HISYCOL a hybrid computational intelligence system for combined machine learning: the case of air pollution modeling in Athens. *Neural Comput & Applic* 27, 1191–1206. <https://doi.org/10/f8r7vf>
9. Bougoudis, I., Demertzis, K., Iliadis, L., Anezakis, V.-D., Papaleonidas, A., 2018. FuSSFFra, a fuzzy semi-supervised forecasting framework: the case of the air pollution in Athens. *Neural Comput & Applic* 29, 375–388. <https://doi.org/10/gc9bbf>
10. Bougoudis, I., Demertzis, K., Iliadis, L., Anezakis, V.-D., Papaleonidas, A., 2016c. Semi-supervised Hybrid Modeling of Atmospheric Pollution in Urban Centers, in: Jayne, C., Iliadis, L. (Eds.), *Engineering Applications of Neural Networks, Communications in Computer and Information Science*. Springer International Publishing, pp. 51–63.
11. Demertzis, Konstantinos, Anezakis, V.-D., Iliadis, L., Spartalis, S., 2018a. Temporal Modeling of Invasive Species' Migration in Greece from Neighboring Countries Using Fuzzy Cognitive Maps, in: Iliadis, L., Maglogiannis, I., Plagianakos, V. (Eds.), *Artificial Intelligence Applications and Innovations, IFIP Advances in Information and Communication Technology*. Springer International Publishing, pp. 592–605.
12. Demertzis, K., Iliadis, L., 2018b. The Impact of Climate Change on Biodiversity: The Ecological Consequences of Invasive Species in Greece, in: Leal Filho, W., Manolas, E., Azul, A.M., Azeiteiro, U.M., McGhie, H. (Eds.), *Handbook of Climate Change Communication: Vol. 1: Theory of Climate Change Communication, Climate Change Management*. Springer International Publishing, Cham, pp. 15–38. https://doi.org/10.1007/978-3-319-69838-0_2
13. Demertzis, K., Iliadis, L., 2017a. Adaptive Elitist Differential Evolution Extreme Learning Machines on Big Data: Intelligent Recognition of Invasive Species, in: Angelov, P., Manolopoulos, Y., Iliadis, L., Roy, A., Vellasco, M. (Eds.), *Advances in Big Data, Advances in Intelligent Systems and Computing*. Springer International Publishing, pp. 333–345.
14. Demertzis, K., Iliadis, L., 2015c. Intelligent Bio-Inspired Detection of Food Borne Pathogen by DNA Barcodes: The Case of Invasive Fish Species *Lagocephalus Sceleratus*, in: Iliadis, L., Jayne, C. (Eds.), *Engineering Applications of Neural Networks, Communications in Computer and Information Science*. Springer International Publishing, pp. 89–99.
15. Demertzis, K., Iliadis, L., Anezakis, V., 2017. A deep spiking machine-hearing system for the case of invasive fish species, in: 2017 IEEE International

- Conference on INnovations in Intelligent SysTems and Applications (INISTA). Presented at the 2017 IEEE International Conference on INnovations in Intelligent SysTems and Applications (INISTA), pp. 23–28. <https://doi.org/10.1109/INISTA.2017.8001126>
- 16. Demertzis, Konstantinos, Iliadis, L., Anezakis, V.-D., 2017a. Commentary: *Aedes albopictus* and *Aedes japonicus*—two invasive mosquito species with different temperature niches in Europe. *Front. Environ. Sci.* 5. <https://doi.org/10/gdp865>
 - 17. Demertzis, K., Iliadis, L., Avramidis, S., El-Kassaby, Y.A., 2017. Machine learning use in predicting interior spruce wood density utilizing progeny test information. *Neural Comput & Applic* 28, 505–519. <https://doi.org/10/gdp86z>
 - 18. Demertzis, Konstantinos, Iliadis, L.S., Anezakis, V.-D., 2018d. Extreme deep learning in biosecurity: the case of machine hearing for marine species identification. *Journal of Information and Telecommunication* 2, 492–510. <https://doi.org/10/gdwszn>
 - 19. Dimou, V., Anezakis, V.-D., Demertzis, K., Iliadis, L., 2018. Comparative analysis of exhaust emissions caused by chainsaws with soft computing and statistical approaches. *Int. J. Environ. Sci. Technol.* 15, 1597–1608. <https://doi.org/10/gdp864>
 - 20. Iliadis, L., Anezakis, V.-D., Demertzis, K., Mallinis, G., 2017. Hybrid Unsupervised Modeling of Air Pollution Impact to Cardiovascular and Respiratory Diseases. *IJISCRAM* 9, 13–35. <https://doi.org/10/gfkhpm>
 - 21. Iliadis, L., Anezakis, V.-D., Demertzis, K., Spartalis, S., 2018. Hybrid Soft Computing for Atmospheric Pollution-Climate Change Data Mining, in: Thanh Nguyen, N., Kowalczyk, R. (Eds.), *Transactions on Computational Collective Intelligence XXX, Lecture Notes in Computer Science*. Springer International Publishing, Cham, pp. 152–177. https://doi.org/10.1007/978-3-319-99810-7_8
 - 22. Demertzis, K., Iliadis, L., 2017b. Detecting invasive species with a bio-inspired semi-supervised neurocomputing approach: the case of *Lagocephalus sceleratus*. *Neural Comput & Applic* 28, 1225–1234. <https://doi.org/10/gbkgb7>
 - 23. Κωνσταντίνος Δεμερτζής, Λάζαρος Ηλιάδης, 2015, Γενετική Ταυτοποίηση Χωροκατακτητικών Ειδών με Εξελιγμένες Μεθόδους Τεχνητής Νοημοσύνης: Η Περίπτωση του Ασιατικού Κουνουπιού Τίγρης (*Aedes Albopictus*). Θέματα Δασολογίας & Διαχείρισης Περιβάλλοντος & Φυσικών Πόρων, 7ος τόμος, Κλιματική Αλλαγή: Διεπιστημονικές Προσεγγίσεις, ISSN: 1791-7824, ISBN: 978-960-9698-11-5, Εκδοτικός Οίκος: Δημοκρίτειο Πανεπιστήμιο Θράκης
 - 24. Βαρδής-Δημήτριος Ανεζάκης, Κωνσταντίνος Δεμερτζής, Λάζαρος Ηλιάδης. Πρόβλεψη Χαλαζοπτώσεων Μέσω Μηχανικής Μάθησης. 3ο Πανελλήνιο Συνέδριο Πολιτικής Προστασίας «SafeEvros 2016: Οι νέες τεχνολογίες στην υπηρεσία της Πολιτικής Προστασίας», Proceedings, ISBN : 978-960-89345-7-3, Ιούνιος 2017, Εκδοτικός Οίκος: Δημοκρίτειο Πανεπιστήμιο Θράκης.
 - 25. Konstantinos Demertzis, Lazaros Iliadis, Vardis-Dimitris Anezakis, A Machine Hearing Framework for Real-Time Streaming Analytics Using Lambda Architecture, 20th International Conference on Engineering Applications of Neural Networks (EANN 2019) proceedings (accepted).