Maria Tzelepi

Postdoctoral Researcher

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Education

03/2021 **PhD**, *in Informatics*, Aristotle University of Thessaloniki (AUTh), Deep Learning Techniques in Digital Media
Supervisor: Prof. Anastasios Tefas

09/2016 **MSc**, *in Informatics*, Aristotle University of Thessaloniki (AUTh), Digital Media - Computational Intelligence

03/2013 **BSc**, *in Informatics*, Aristotle University of Thessaloniki (AUTh)

Research & Professional Experience

2023-Present **PostDoc Researcher**, Information Technologies Institute (ITI) / Centre for Research and Technology Hellas (CERTH), Thessaloniki, Greece

2021-2023 **PostDoc Researcher**, Aristotle University of Thessaloniki (AUTh), Thessaloniki, Greece

2017-2021 **Researcher**, Aristotle University of Thessaloniki (AUTh), Thessaloniki, Greece

Awards & Scholarships

2022 **Award**, *Greek Women in STEM*, Category: Technology, She STEMs symposium, Greece

2022 **Award**, *Best 2020-2021 Doctoral Thesis in the Area of Artificial Intelligence*, Hellenic Artificial Intelligence Society (EETN), Greece

2018 **Award**, *Among 5 Best Student Papers*, "Fully Unsupervised Convolutional Learning for Fast Image Retrieval," Hellenic Conference on Artificial Intelligence (SETN), Patras, Greece

2017 **Scholarship**, General Secretariat for Research and Technology (GSRT) and Hellenic Foundation for Research and Innovation (HFRI), 1st Call for HFRI Scholarships to PhD candidates, Greece

Supervisory Experience

2019-Present **Co-supervision**, 6 undergraduate theses & 2 postgraduate master theses
Co-supervised with Prof. Anastasios Tefas (Dept. of Informatics, Aristotle University of Thessaloniki)

Conference Organizing Committee

2022 **IEEE Image, Video, and Multidimensional Signal Processing Workshop (IVMSP)**, *Finance Chair*, Nafplio, Greece

Workshop Organization

2023 **Open Workshop "AI in Energy"**, in the context of MALENA Project, Co-organization
Thessaloniki, Greece

Participation in Conferences

2024 **European Conference on Signal Processing (EUSIPCO)**, Participation and presentation of 1 paper, Lyon, France

2024 **International Conference on Engineering Applications of Neural Networks (EANN)**, Participation and presentation of 1 paper, Virtual-Corfu, Greece

2023 **International Conference on Engineering Applications of Neural Networks (EANN)**, Participation and presentation of 1 paper, Virtual-León, Spain

2022 **Panhellenic Conference on Electronics and Telecommunications (PACET)**, Participation and presentation of 2 papers, Tripolis, Greece

2022 **Hellenic Conference on Artificial Intelligence (SETN)**, Participation and presentation of the PhD thesis, Corfu, Greece

2022 **International Conference on Information, Intelligence, Systems & Applications (IISA)**, Participation and presentation of 2 papers, Corfu, Greece

2022 **IEEE Image, Video, and Multidimensional Signal Processing Workshop (IVMSP)**, Participation, presentation of 1 paper and chairing a session, Nafplio, Greece

2022 **Summit on Gender Equality in Computing (GEC)**, Participation and presentation of 2 papers, Thessaloniki, Greece

2021 **International Conference on Multimedia and Expo (ICME)**, Participation and presentation of 1 paper, Virtual-Shenzhen, China

2021 **International Conference on Information, Intelligence, Systems & Applications (IISA)**, Participation and presentation of 1 paper, Virtual-Crete, Greece

2020 **International Conference on Pattern Recognition (ICPR)**, Participation and presentation of 1 paper, Virtual-Milano, Italy

2020 **IEEE International Workshop on MACHINE LEARNING FOR SIGNAL PROCESSING (MLSP)**, Participation and presentation of 1 paper, Virtual-Espoo, Finland

2018 **Hellenic Conference on Artificial Intelligence (SETN)**, Participation and presentation of 2 papers, Patras, Greece

2016 **Hellenic Conference on Artificial Intelligence (SETN)**, Participation, Thessaloniki, Greece

Invited Talks

2023 **AI in Energy**, FemPower Summer School, Thessaloniki, Greece

2023 **Deep Learning for Electric Load Demand Forecasting**, Open Workshop "AI in Energy", Thessaloniki, Greece

2022 **Deep Learning Techniques in Digital Media**, Hellenic Conference on Artificial Intelligence (SETN), Corfu, Greece

Service

Reviewer, IEEE Transactions on Pattern Analysis and Machine Intelligence, IEEE Transactions on Image Processing, IEEE Transactions on Neural Networks and Learning Systems, Neurocomputing, Neural Processing Letters, IEEE Signal Processing Letters, Neural Networks, IEEE Access, Expert Systems With Applications, Knowledge-Based Systems, AAAI, ECML PKDD, ICPR, ICME, ICIP, ICASSP, ICMR, EUSIPCO

Publications

Peer-reviewed Journals

1. O. Stentoumi, P. Nousi, **M. Tzelepi** and A. Tefas, "AnIO: Anchored Input-Output Learning for Time-series Forecasting", *Neural Computing and Applications,* 2023
2. **M. Tzelepi**, N. Passalis and A. Tefas, "Probabilistic Online Self-Distillation," *Neurocomputing ,* 2022
3. E. Kakaletsis, C. Symeonidis, **M. Tzelepi**, I. Mademlis, A. Tefas, N. Nikolaidis, I. Pitas, "Computer Vision for Autonomous UAV Flight Safety: An Overview and a Vision-based Safe Landing Pipeline Example," *ACM Computing Surveys ,* 2021
4. **M. Tzelepi**, N. Passalis and A. Tefas, "Online Subclass Knowledge Distillation," *Expert Systems with Applications ,* 2021
5. **M. Tzelepi** and A. Tefas, "Improving the performance of lightweight CNNs for binary classification using Quadratic Mutual Information regularization," *Pattern Recognition,* 2020
6. N. Passalis, **M. Tzelepi** and A. Tefas, "Probabilistic Knowledge Transfer for Lightweight Deep Representation Learning," *IEEE Transactions on Neural Networks and Learning Systems,* 2020
7. **M. Tzelepi** and A. Tefas, "Class-Specific Discriminant Regularization in real-time deep CNN models for binary classification problems," *Neural Processing Letters,* 2019
8. **M. Tzelepi** and A. Tefas, "Graph Embedded Convolutional Neural Networks in Human Crowd Detection for Drone Flight Safety," *IEEE Transactions on Emerging Topics in Computational Intelligence,* 2019
9. E. Daskalakis, **M. Tzelepi** and A. Tefas, "Learning deep spatiotemporal features for video captioning," *Pattern Recognition Letters,* 2018
10. **M. Tzelepi** and A. Tefas, "Deep convolutional image retrieval: A general framework," *Signal Processing: Image Communication,* 2018
11. N. Kondylidis, **M. Tzelepi** and A. Tefas, "Exploiting tf-idf in deep Convolutional Neural Networks for Content Based Image Retrieval," *Multimedia Tools and Applications,* 2018
12. **M. Tzelepi** and A. Tefas, "Deep Convolutional Learning for Content Based Image Retrieval," *Neurocomputing,* 2018

Peer-reviewed Conferences (with proceedings)

1. A. Vafeidis, **M. Tzelepi** and A. Tefas, " Anchored Input-Output Encoding for Improving the Performance of Temporal Convolutional Networks", *IEEE International Conference on Information, Intelligence, Systems and Applications (IISA),* 2024
2. **M. Tzelepi** and V. Mezaris, "Disturbing Image Detection Using LMM-Elicited Emotion Embeddings", *Integrating Image Processing with Large-Scale Language/Vision Models for Advanced Visual Understanding (LVLM) Workshop at IEEE International Conference on Image Processing (ICIP),* 2024
3. **M. Tzelepi** and V. Mezaris, "Online Anchor-based Training for Image Classification Tasks", *IEEE International Conference on Image Processing (ICIP),* 2024
4. **M. Tzelepi** and V. Mezaris, "Prototype Anchoring for Image Classification Tasks", *European Signal*

Processing Conference (EUSIPCO), 2024

5. **M. Tzelepi** and V. Mezaris, "Exploiting LMM-based knowledge for image classification tasks", *International Conference on Engineering Applications of Neural Networks (EANN)*, 2024

6. D. Moralis, **M. Tzelepi** and A. Tefas, "Retrieval-based methodology for few-sample logo recognition", *IEEE International Workshop on Multimedia Signal Processing (MMSP)*, 2023

7. A. Andronikos, **M. Tzelepi** and A. Tefas, "Residual Error Learning for Electricity Demand Forecasting", *International Conference on Engineering Applications of Neural Networks (EANN)*, 2023

8. **M. Tzelepi**, P. Nousi and A. Tefas, "Improving Electric Load Demand Forecasting with Anchor-based Forecasting Method", *IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, 2023

9. P. Nousi, **M. Tzelepi** and A. Tefas, "Anchored Input-Output Learning for Electrical Load Demand Forecasting", *IEEE International Symposium on Circuits and Systems (ISCAS)*, 2023

10. **M. Tzelepi**, A. Sapountzaki, N. Maragkos and A. Tefas, "Online Self-Distillation for Electric Load Demand Forecasting on Greek Energy Market ", *PAnhellenic Conference on Electronics and Telecommunications (PACET)*, 2022

11. G. Emmanouilidis, **M. Tzelepi** and A. Tefas, "Short-Term Electric Load Demand Forecasting on Greek Energy Market using Deep Learning: A comparative study ", *PAnhellenic Conference on Electronics and Telecommunications (PACET)*, 2022

12. N. Passalis, S. Pedrazzi, R. Babuska,..., **M. Tzelepi** and A. Tefas, "OpenDR: An Open Toolkit for Enabling High Performance, Low Footprint Deep Learning for Robotics ", *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, 2022

13. **M. Tzelepi**, C. Symeonidis, N. Nikolaidis and A. Tefas, "Multilayer Online Self-Acquired Knowledge Distillation ", *International Conference on Pattern Recognition (ICPR)*, 2022

14. N. Passalis, **M. Tzelepi**, P. Charitidis, S. Doropoulos, S. Vologiannidis and A. Tefas, "Deep Video Stream Information Analysis and Retrieval: Challenges and Opportunities", *International Conference on Multimedia Information Processing and Retrieval (MIPR)*, 2022

15. N. Maragkos, **M. Tzelepi**, N. Passalis, A. Adamakos and A. Tefas, "Electric load demand forecasting on Greek Energy Market using lightweight neural networks", *IEEE Image, Video, and Multidimensional Signal Processing Workshop (IVMSP)*, 2022

16. **M. Tzelepi** and A. Tefas, "Forecasting day-ahead electric load demand on Greek Energy Market", *IEEE International Conference on Information, Intelligence, Systems and Applications (IISA)*, 2022

17. **M. Tzelepi**, C. Symeonidis, N. Nikolaidis and A. Tefas, "Real-time synthetic-to-real human detection for robotics applications", *IEEE International Conference on Information, Intelligence, Systems and Applications (IISA)*, 2022

18. **M. Tzelepi**, N. Tragkas and A. Tefas, "Improving binary semantic scene segmentation for robotics applications", *International Conference on Engineering Applications of Neural Networks (EANN)*, 2022

19. **M. Tzelepi** and A. Tefas, "Semantic Scene Segmentation for Robotics Applications", *IEEE International Conference on Information, Intelligence, Systems and Applications (IISA)*, 2021

20. **M. Tzelepi** and A. Tefas, "Efficient training of lightweight neural networks using Online Self-Acquired Knowledge Distillation", *IEEE International Conference on Multimedia and Expo (ICME)*, 2021

21. **M. Tzelepi**, N. Passalis and A. Tefas, "Efficient Online Subclass Knowledge Distillation for Image Classification", *International Conference on Pattern Recognition (ICPR)*, 2020

22. N. Passalis, **M. Tzelepi** and A. Tefas, "Heterogeneous Knowledge Distillation using Information Flow Modeling", *Conference on Computer Vision and Pattern Recognition (CVPR)*, 2020

23. N. Passalis, **M. Tzelepi** and A. Tefas, "Multilayer Probabilistic Knowledge Transfer for Learning Image Representations", *IEEE International Symposium on Circuits & Systems (ISCAS)*, 2020

24. **M. Tzelepi** and A. Tefas, "Quadratic Mutual Information Regularization in Real-Time Deep CNN Models", *IEEE International Workshop on Machine Learning for Signal Processing (MLSP)*, 2020
25. C. Nasioutzikis, **M. Tzelepi** and A. Tefas, "Deep Hashing Regularization Towards Hamming Space Retrieval", *Hellenic Conference on Artificial Intelligence (SETN)*, 2020
26. **M. Tzelepi** and A. Tefas, "Improving the Performance of Lightweight CNN Models Using Minimum Enclosing Ball Regularization", *European Signal Processing Conference, (EUSIPCO)*, 2019
27. **M. Tzelepi** and A. Tefas, "Discriminant analysis regularization in lightweight deep CNN models.", *IEEE International Conference on Image Processing (ICIP)*, 2019
28. E. Kakaletsis, **M. Tzelepi**, P. I .Kaplanoglou, C. Symeonidis, N. Nikolaidis, A. Tefas and I. Pitas, "Semantic Map Annotation through UAV Video Analysis using Deep Learning Models in ROS," *International Conference on MultiMedia Modeling (MMM)*, 2019
29. **M. Tzelepi** and A. Tefas, "Fully unsupervised optimization of CNN features towards Content Based Image Retrieval," *IEEE Image, Video, and Multidimensional Signal Processing (IVMSP) Workshop*, 2018
30. **M. Tzelepi** and A. Tefas, "Fully Unsupervised Convolutional Learning for Fast Image Retrieval," *Hellenic Conference on Artificial Intelligence (SETN)*, 2018
31. **M. Tzelepi** and A. Tefas, "Human Crowd Detection for Drone Flight Safety Using Convolutional Neural Networks," *European Signal Processing Conference (EUSIPCO)*, 2017
32. **M. Tzelepi** and A. Tefas, "Relevance feedback in deep convolutional neural networks for content based image retrieval," *Hellenic Conference on Artificial Intelligence (SETN)*, 2016
33. **M. Tzelepi** and A. Tefas, "Exploiting supervised learning for finetuning deep CNNs in content based image retrieval," *International Conference on Pattern Recognition (ICPR)*, 2016

Peer-reviewed Conferences (without proceedings)
1. **M. Tzelepi** and A. Tefas, "Electric Load Demand Forecasting on Greek Energy Market", *4th Summit on Gender Equality in Computing (GEC)*, 2022
2. P. Nousi, **M. Tzelepi**, N. Passalis and A. Tefas, "Lightweight Deep Learning Methods for Robotics Applications Using the OpenDR Toolkit", *4th Summit on Gender Equality in Computing (GEC)*, 2022
3. **M. Tzelepi**, C. Symeonidis, N. Nikolaidis and A. Tefas, "Multilayer Online Self-Acquired Knowledge Distillation"", *4th Summit on Gender Equality in Computing (GEC)*, 2022

Book Chapters
1. P. Nousi, **M. Tzelepi**, N. Passalis and A. Tefas, "Lightweight Deep Learning", *Deep Learning for Robot Perception and Cognition, Edited by A. Iosifidis and A. Tefas*, 2022
2. N. Passalis, **M. Tzelepi** and A. Tefas, "Knowledge Distillation", *Deep Learning for Robot Perception and Cognition, Edited by A. Iosifidis and A. Tefas*, 2022
3. **M. Tzelepi**, P. Nousi, N. Passalis and A. Tefas, "Representation Learning and Retrieval", *Deep Learning for Robot Perception and Cognition, Edited by A. Iosifidis and A. Tefas*, 2022