Dimitrios Papaioannou

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Professional & Research Objective

Machine Learning Engineer / AI Researcher with expertise in Deep Learning, Computer Vision, and Blockchain. Seeking opportunities in both industry (AI innovation, ML engineering, and applied AI research) and academia (PhD or research assistant roles in AI and decentralized learning). Passionate about bridging research and real-world applications in AI-driven systems.

Research and Technical Interests

- **Deep Learning & Computer Vision:** Adversarial Robustness, Generative Adversarial Networks, Duffision Models, Sematic Segmentation
- **Blockchain & AI Security:** Distributed Consensus, Decentralized AI Systems
- **Industry Applications:** Scalable AI deployment, Federated Learning, AI for Automation

Work and Research Experience

AI Researcher, AIIA Lab | Aristotle University of Thessaloniki – Thessaloniki, GR Jan 2022 – Jan 2023

- Research on applications of Deep Learning in Blockchain Systems.
- Authored and submitted a journal paper and MSc thesis. Delivered a guest lecture on blockchain technologies.
- Developed and maintained supplementary education materials for the i-iada.org.

AI Researcher, AIIA Lab | Aristotle University of Thessaloniki – Thessaloniki, GR Sept 2023 – now

- Conducted research on Distributed Deep Learning & Computer Vision.
- Developed a ROS-based Flood Segmentation System for real-time disaster prediction and an Android GPS tracking application for emergency situations.
- Submitted 1 journal paper & published 4 conference papers on AI and blockchain. Contributed to Deliverables for the European Horizon TEMA Project.

Publications

Thesis

[2] Papaioannou Dimitrios. “Distributed Consensus Inference and Blockchain”. MSc Thesis. Aristotle University Of Thessaloniki (AUTH), 2022.

Journal

[7] Dimitrios Papaioannou, Vasileios Mygdalis, and Ioannis Pitas. *Revisiting One versus One Classification for Adversarial Robustness*. Under Review to Neural Networks. Feb. 2025.

[8] Dimitrios Papaioannou, Vasileios Mygdalis, and Ioannis Pitas. “Towards human society-inspired decentralized DNN inference”. In: *Signal Processing: Image Communication* (2025), p. 117306. ISSN: 0923-5965. DOI: https://doi.org/10.1016/j.image.2025.117306. URL: https://www.sciencedirect.com/science/article/pii/S0923596525000530.

Conference

[1] **. "Robust Forest Fire Image Classification". In: *Submitted to 2026 IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*. IEEE.

[3] Anastasios Gerontopoulos et al. "Real-Time Flood Water Segmentation with Deep Neural Networks". In: *proceedings of 2025 IEEE 24th International Symposium on Cluster, Cloud and Internet Computing (CCGrid)*. 2025.

[4] Dimitrios Papaioannou, Vasileios Mygdalis, and Ioannis Pitas. "A Distributed Sharding BFT Consensus Approach, for Efficient Decentralized DNN Inference". In: *proceedings of 2025 IEEE Symposium on Computers and Communications (ISCC)*. IEEE. 2025.

[5] Dimitrios Papaioannou, Vasileios Mygdalis, and Ioannis Pitas. "Forest Fire Image Classification Through Decentralized DNN Inference". In: *2024 IEEE International Conference on Image Processing Challenges and Workshops (ICIPCW)*. IEEE. 2024, pp. 4134–4140.

[6] Dimitrios Papaioannou, Vasileios Mygdalis, and Ioannis Pitas. "Proof of Quality Inference (PoQI): An AI Consensus Protocol for Decentralized DNN Inference Frameworks". In: *2024 IEEE Symposium on Computers and Communications (ISCC)*. IEEE. 2024, pp. 1–7.

Research Collaboration, Ferhat Abbas University, 2025

- Collaborated with Dr. Annane Boubakeur from Ferhat Abbas University - Algeria on a research manuscript about Blockchain and AI.

International Conference Presentations

- A. Gerontopoulos, D. Papaioannou, C. Papaioannidis, I. Pitas "Real-Time Flood Water Segmentation with Deep Neural Networks". 2025 IEEE 24th International Symposium on Cluster, Cloud and Internet Computing (CCGrid). Tromso, Norway, 2025 (Oral Presentation)
- D. Papaioannou, V. Mygdalis, and I. Pitas. "A Distributed Sharding BFT Consensus Approach, for Efficient Decentralized DNN Inference". 2025 IEEE Symposium on Computers and Communications (ISCC). Bologna, Italy, 2025 (Oral Presentation)
- I. Valsamara, C. Papaioannidis, and I. Pitas. "Distilling Structural Knowledge: Teaching Representations in Multi-DNN Agent Systems". 2025 IEEE Symposium on Computers and Communications (ISCC). Bologna, Italy, 2025 (Oral Presentation)

Projects

AI4Media, European Horizon 2020 Project, 2021-2023

- Research on AI tools for emerging technologies such as blockchain and development of supplementary materials for lectures (e.g., Cryptography, Blockchain Consensus Protocols, Cryptocurrencies).
- Tools Used: Python, Overleaf, Power-Point

Trusted Extremely Precise Mapping and Prediction for Emergency Management (TEMA), European Horizon Project, 2023-2025

- Conducted research on Adversarial defensive strategies for robust DNN classification, real-time semantic segmentation, and decentralized DNN inference.
- Developed and maintained Flood Region Segmentation technology for real-time disaster prediction. Developed and integrated an Android GPS tracking application.
- Participated in technical and plenary meetings, collaborating with international partners to integrate AI-driven solutions.
- Tools Used: Python, RoS, Docker

Education

Aristotle University of Thessaloniki, BSc in Mathematics — Sept 2013 – Sept 2019

Aristotle University of Thessaloniki, MSc in Digital Media - Computational Intelligence — Sept 2020 – Sept 2022

Academic Activities

Guest Lecture: Blockchain Consensus Protocols and Cryptocurrencies, Aristotle University of Thessaloniki 02/2022

Invited by Professor Ioannis Pitas to deliver a 2-hour lecture on Blockchain Consensus Protocols and Cryptocurrencies, focusing on the key aspects of Bitcoin's blockchain architecture and its distinctions from other major cryptocurrency projects.

Reviewer - IEEE International Conference on Image Processing (ICIP), 2025

Selected as a peer reviewer for the IEEE International Conference on Image Processing (ICIP) 2025, assessing research contributions in Distributed Learning and Computer Vision.

Support Team Member/Session Moderator at AIDA - AICET 2025, 2025

Served as a panel moderator during lectures (introduced speakers / managed Q&A sessions / monitored presentation timing). Managed zoom-based participation for remote attendees, including live admission and technical oversight. Conducted and co-hosted post-lecture discussions and interviews with guest lecturers.

Technologies

Languages: Python, `C#`, Solidity, Mathematica, Kotlin (low), JavaScript (Low), Matlab

Tools/Frameworks: Unity, PyTorch, TensorFlow, ROS, Docker

IDEs/Other: Pycharm, VS Code, Overleaf, PowerPoint

Additional Information

- Open to both industry and academic research positions (PhD, Research Assistant).
- Passionate about advancing AI research for real-world applications in automation and security.