# Paschalis Giakoumoglou

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## RESEARCH INTERESTS

Time Series, Computer Vision, Machine Learning, Deep Learning, Self-supervised Learning, Game Theory, Diffusion Models

## EDUCATION

**Aristotle University of Thessaloniki**, Thessaloniki, Greece — September 2019 — November 2024
Integrated MSc in Electrical and Computer Engineering — GPA: 9.42/10.00
Thesis title: "*Detection of Image Manipulations Created Using Convolutional Neural Networks and Diffusion Models*", supervised by Prof. Panagiotis Petrantonakis

**2nd Experimental School of Thessaloniki**, Thessaloniki, Greece — September 2016 — June 2019
Awarded for academic excellence in all years by the Ministry of Education — GPA: 19.9/20.0

## WORK EXPERIENCE

**Centre for Research and Technology Hellas**, Thessaloniki, Greece — Dec 2025 — Present
Research Assistant, Supervised by Dr. Symeon Papadopoulos

- Improved near-duplicate detection service for video and images, iachieving better detection accuracy and scalability to handle variable video sizes with optimized performance.
- Developed image quality assessment algorithms for AI generative models, focusing on realism evaluation based on human perceptual distinguishability from authentic content.
- Developed automated tools for building AI inpainting detection datasets that consistently improve forensic algorithms.

## PUBLICATIONS

P. Giakoumoglou, D. Karageorgiou, S. Papadopoulos, and P. C. Petrantonakis, "SAGI: Semantically Aligned and Uncertainty Guided AI Image Inpainting," in Proceedings of the IEEE/CVF International Conference on Computer Vision (ICCV), 2025. arXiv: 2502.06593 [cs.CV]. [Online]. Available: https://arxiv.org/abs/2502.06593.

## ACADEMIC PROJECTS / COLLABORATIONS

**Self-supervised Learning for Radio Signal Analysis**
*Collaboration with Dr Athanasios Gkelias* — *Jun 2025–Present*

- Implementing SSL methods with pretext tasks designed for radio signals, contributing to an open SSL library.
- Assessing SSL methods for modulation classification and outlier detection in radio signal applications.

**Machine Learning for Diabetes Detection**
*Signal Processing and Biomedical Technology Group under Prof. Leontios J. Hadjileontiadis* — *May–Sep 2023*

- Employed multiresolution analysis, bispectral analysis, higher-order statistics, and Wavelet Scattering Networks with LSTM, achieving F1-scores of 78.23% and 77.78% for diabetes detection using ECG and ABP signals.

**Nash Equilibriums for Generalized Graph Pursuit Games**
*Under Associate Prof. Athanasios Kehagias* — *Apr–Jun 2023*

- Employed genetic algorithms and simulated annealing to determine Nash Equilibria (NE) in generalized graph pursuit games.
- Improved the Nash-Q learning algorithm to ensure NE convergence and identification of multiple NE.

## MEMBERSHIPS

**Institute of Electrical and Electronics Engineers**; member — Feb 2025 —Present
Actively participating in local chapter events and regularly reading publications.

**Technical Chamber of Greece**; member — Feb 2025 —Present
Regularly attending seminars and conferences on current technical and business affairs.

## SKILLS

- **Programming:** Python, MATLAB, Java
- **Software:** PyTorch, OpenCV, Linux (Ubuntu)
- **Languages:** Greek (native), English (fluent-Certificate of Proficiency in English), German (advanced intermediate level)