PANAGIOTIS CHRISTAKAKIS

AI / ML Engineer



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SKILLS

- **Python, R, SQL, Neo4j**
- Experience in Computer Vision using **Pytorch, TensorFlow, Hugging Face**
- Artificial Intelligence
- Machine Learning Algorithms
- Data Manipulation – Visualization
- Supervised – Unsupervised Learning

AWARDS

- Best Paper Award in IEEE Conf. Session "Advanced in Image Segmentation for Biological and Agricultural Applications for the outstanding paper entitled: "AI-based robotic trap for real-time insect detection, monitoring and population prediction", January 2025, Lyon, France.

LANGUAGES

English Proficiency C2
ECPE University of Michigan

Greek
Native Language

INTERESTS

- LLMs
- Generative Adversarial Networks
- Deep Learning / Transfer Learning
- AI and Medical Imaging
- Autonomous Vehicles

ADDITIONAL DETAILS

- Military Obligations Fulfilled
- EASA Pilot Competency (A1/A3, A2)
- Car License (Category: B)

ABOUT

I hold two Master's degrees in Artificial Intelligence & Data Analytics and Robotics & STEAM Technologies, with a strong focus on Machine Learning, Deep Learning, and Computer Vision. My research interests lie in developing AI-driven solutions for real-world challenges.

Currently, I work as an AI Engineer at CERTH, where I design and develop AI-driven DL and predictive models for real-time plant disease and insect detection using advanced hyperspectral imaging data. Also, I contribute to project coordination activities in two Horizon Europe projects, supporting planning, progress monitoring, and facilitating effective collaboration among project partners.

EXPERIENCE

AI Engineer - Research Associate @ CERTH

- 2023 - present

- **Design, develop, and deployment of ML/DL models** for image segmentation, detection, and predictive analytics, focusing on real-time plant disease monitoring using imaging data.

- **Project coordination** in the EU Horizon E-SPFdigit, EmergeNOW, PestNu projects, for planning, progress monitoring, facilitating effective collaboration among partners.

EDUCATION

MSc in Robotics, STEAM & New Technologies in Education (Grade: 9,13)

International Hellenic University

- 2024 - 2026

MSc in AI & Data Analytics (Grade: 9,19)

University of Macedonia

- 2022 – 2025

BSc in Applied Informatics (Grade: 7)

University of Macedonia

- 2018 - 2021

RELEVANT PUBLICATIONS (see more here)

Post-Heuristic Cancer Segmentation Refinement over MRI Images and Deep Learning Models
Christakakis P. et al, AI – MDPI, 2025
- PyTorch-based segmentation pipeline (U-Net variants) for MRI tumor delineation (**>85%**)
- Post-processing Algorithm: morphological ops, connected components, FP filtering
- Algorithm **improved** segmentation for **two-thirds of patients**

Synthetic Dataset for AI-Driven Photovoltaic Fault and Damage Detection via UAV Thermal Imaging
Christakakis P. et al, IEEE, 2025
- Synthetic dataset generation using **MLLM** (Janus-4o) & Cut–Paste–blend pipeline
- YOLOv11 pipeline for UAV thermal image object detection (PV panels & faults)

Vision Transformers in Optimization of AI-Based Early Detection of Botrytis cinerea
Christakakis P. et al, AI – MDPI, 2024
- PyTorch-based ViT pipeline, patch embedding, self-attention, for plant disease detection
- **Custom Cut–Paste augmentation** to address class imbalance & limited samples (**>10% improvement**)

Multispectral AI-driven imaging for detection of downy mildew and gray mold in grapevines
…, Christakakis P. et al, Smart Agricultural Technology – Elsevier, 2026
- PyTorch multi-modal pipeline (YOLOv11 + SegFormer, multispectral + depth data)
- Dual-stage segmentation: instance (YOLO) + semantic (dual-head SegFormer) (**mAP >89%**)

Multi-spectral image transformer descriptor classification combined with molecular tools for early detection of tomato grey mould
…, Christakakis P. et al, Smart Agricultural Technology – Elsevier, 2025
- PyTorch & **Hugging Face timm** models for pretrained CNN/ViT backbones (**mAP >81%**)
- Fine-tuning & feature extraction using ImageNet-pretrained weights

Smartphone-based citizen science tool for plant disease and insect pest detection using AI
Christakakis P. et al, Technologies – MDPI, 2024
- DL-based detection system integrated in mobile app (CNN models, **mAP >70%**)
- Architecture: Ionic + Angular frontend, Python REST API, PostgreSQL, Keycloak, RabbitMQ