Apostolos Foivos Varelas

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Profile

Passionate about AI, Machine Learning, and Robotics, with hands-on experience from university projects in deep learning, reinforcement learning, ROS2, and multimodal systems. Through my work in automation and satellite data analysis, I have developed a strong foundation in Python and problem-solving. I am eager to keep building intelligent systems that connect AI theory with real-world robotics applications.

Skills

- **Programming**
  - Python
  - C
  - Docker
  - Git
- **Data & Geospatial**
  - NumPy
  - GDAL
  - Rasterio
  - GeoPandas
  - Matplotlib
- **AI / ML**
  - Neural Networks
  - CNN/RNN/LSTM
  - Transformers
  - LLMs
  - Reinforcement Learning
  - AI Agents
- **Robotics & Automation**
  - ROS 2
  - Robotics
  - Automation Systems

Work Experience

EAGLE PROJECTS

February 2024- Present: Software Developer

- Sentinel-2 Processing Pipeline
  - Delivered an end-to-end Copernicus pipeline: ingestion → 1 m super-resolution → spectral indices → 1 m classification → pixel-level change detection → Google Maps tile pyramid.
  - Implemented robust geospatial processing with GDAL/Rasterio (alignment, clipping, EPSG transforms) and produced multi-band GeoTIFFs + CSV summaries.
  - Automated ops with Docker + config-driven YAML, logging, and error handling; supported S3 uploads and local fallback sync with alerting.
  - Generated change-maps and shapefiles (prev/curr class, label) and exported web-ready tiles for quick visual QA and stakeholder sharing.
- Sentinel-1 Subsidence& DEM
  - Refactored and optimized the S1 pipeline for Copernicus ingestion, interferogram generation, unwrapping, SBAS subsidence trends/velocities, and DEM creation.
  - Structured the codebase into clear modules (pipeline, processing, utils) with YAML configs, unit tests, and improved logging/observability.
  - Accelerated heavy steps using xarray/Dask parallelism and streamlined I/O with GDAL/Rasterio; produced GeoTIFF/PNG deliverables.
  - Added STL-based decomposition and POI analyses for interpretable displacement time-series, improving reporting quality.

Education

MASTERS IN AI

University of Piraeus, dep Digital Systems 2024- Present

Thesis: Safe Autonomous Robot Navigation in 3D Settings

BACHELOR IN COMPUTER SCIENCE

University of Piraeus, dep Digital Systems 2020- 2024

Thesis: Reinforcement Learning in a Competitive Environment

ENGLISH CERTIFICATE

C2 Proficiency in English (Michigan ECCE/ECPE)

Personal Projects

Agent-Auction — Multi-Agent Auction Simulator

Go To Project

- Built a compact multi-agent auction simulator to study bidding strategies and market dynamics across common auction formats.
- Encapsulated auctioneer, bidder agents, and clearing rules; supports reproducible runs and result visualization.
- Tech stack: Python (NumPy, pandas, matplotlib; PyTorch-ready hooks for RL experiments).

DeepFakeDetection — Deep Learning-Based Deep-Fake Video Detection

Go To Project

- Developed deepfake detectors with ResNet50, Xception+SE, and Swin Transformer; trained/evaluated on FaceForensics++ with strong baselines.
- End-to-end PyTorch pipeline: frame extraction (full-frame & face-crop), mixed precision, learning-rate scheduling, early stopping.
- Metrics & explainability: Accuracy, F1, AUC/PR-AP, EER, MCC; Grad-CAM visualizations at frame and video level.

References available