

Nikiforos Pittaras, PhD

Machine Learning researcher / engineer

ML, AI and Data Science enthusiast, focused on Deep Learning for text & multimedia, Reinforcement Learning on cooperative games, and building towards safe and aligned AI systems.

<https://npit.github.io>

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python, java, matlab, C++
 pytorch, trf, sklearn, sb3
 mysql, postgres, cassandra
 docker, bash, git, linux

EDUCATION



- **PhD in Machine Learning:** (University of Athens & NCSR Demokritos) 2017-2021
4-year doctorate, awarded with an [SNF Industrial Scholarship](#), Grade 'Excellent'.
Specialized in augmenting Deep Neural Representations with external semantic information.
Built & deployed industry-grade Hate Speech Detection systems from research findings.
Thesis: "Beyond Deep Learning: Enriching Data Representations for Machine Learning Tasks"
> python, tensorflow, keras, pytorch, DNN, nltk, Wordnet, ray, mlflow, restx
- **MSc in Signal/Information Processing & Learning:** (University of Athens) 2015-2018
2-year Master's degree on Signal Processing, ML, Multimedia, Semantic Analysis. Grade 8.78.
Thesis: "Multimodal video classification with deep neural networks"
> courses: {python, matlab, java, C++}, thesis: {python, tensorflow, keras, DCNN, LSTM}
- **BSc in Computer Science:** (University of Ioannina) 2005-2013
4-year Bachelor's degree (Ptychion), with a focus on ML, AI, Multimedia and VLSI. Grade 7.08.
Thesis: "Image registration with unified particle swarm optimization"
> courses: {C, C++, java, matlab, opengl, vhd1}, thesis: {matlab, unified PSO}

PROFESSIONAL EXPERIENCE



1. **ML Research Scientist:** [UL - DSRI/AIID](#) - Remote / Athens, Greece (part-time) Feb 2024 - present
 - **AI Taxonomy Engineering:** Technical AI taxonomy development, annotation of public AI incident reports.
 - **Prompt Engineering:** Development of LLM research assistants for AI Safety-related incident analysis and categorization.
 - **Academic Writing:** Scientific publication authorship and reviewing, relative to AI Safety.> pytorch, transformers
2. **Senior ML / AI Engineer:** [bunny.net](#) - Remote / Athens, Greece Jan 2023 - present
 - **RL R&D / Engineering:** Model design, implementation, training, tuning, explainability analysis and deployment, using RL (environment / reward engineering) and ML (regression, classification) methods for CDN optimization.
 - **CV Engineering:** Setup / customization of scalable text/image-to-video generation neural pipelines with [StableDiffusion](#), and automatic image cropping pipelines using object and saliency detection workflows.
 - **Constraint Programming:** Implementation, evaluation and tuning of CP solutions for global network optimization.
 - **Series Forecasting:** Implementation, evaluation and tuning of time series forecasting methods.
 - **Backend Engineering:** Setup of broker, REST and storage workflows for scalable, low-latency ML deployments.> pytorch, pt1, gym, sb3, rllib, sklearn, captum, docker, fastapi, influxdb, SD, rmq, mongo, redis, ansible
3. **ML Research Scientist:** [RAIC/AIID](#) - Remote / Athens, Greece (part-time) Jul 2022 - Dec 2022
 - **AI Taxonomy Engineering:** Technical AI taxonomy development for system goals, technologies and failures.
 - **Academic Writing:** Scientific publication authorship for work and result dissemination and presentation.
4. **Postdoc ML Research Engineer:** [IIT-NCSRD/ICS-FORTH](#) - Athens, Greece Nov 2021 - Apr 2023
 - **R&D / Text ML:** Research, ML and backend engineering on [argumentation mining](#) on articles for the Debatelab project.
[Active learning](#), [clustering](#), [topic modelling](#) and [token / text classification](#) with [transformer models](#).> python, pytorch, transformers, BERT, flair, elasticsearch, fastapi, docker
5. **Senior ML Engineer:** [LANGaware](#) - Athens, Greece Jun 2021 - Dec 2022

- **ML Engineering:** Pipeline development and maintenance for multimodal neurodegenerative disease prediction. Design and implementation of ETL and classification procedures, interpretability analysis.
 - **ML Prototyping:** Work with the Data Science team to implement new solutions, experiments and prototypes.
 - **Academic & Technical Writing:** Authorship of scientific papers, proposals and reports on ML work.
 - > python, sklearn, RF, numpy, spacy, nltk, librosa, gcp
6. **AI Alignment Researcher:** Independent / [EA-LTFF](#) - Athens, Greece Jun-Oct 2022
- **RL R&D:** Reinforcement Learning environment design and engineering. Agent communication and betrayal pattern analysis for cooperative tasks, empirical environment validation with experiments.
 - **Academic Writing:** Publication authorship, experiment planning, execution and analysis.
 - > python, pytorch, gym, stable-baselines3, pettingzoo, docker, wandb
7. **Teaching Assistant:** [Center for AI Safety - MLSS program](#) - Remote / Athens, Greece Jun-Aug 2022
- **TA:** Theoretical / technical support on advanced Machine Learning, Deep Learning, AI Safety and Alignment.
 - > python, pytorch, gradescope
8. **Lead ML Engineer:** [SciFY](#)- Athens, Greece (part-time) Nov 2020 - Aug 2021
- **ML Engineering:** Development, maintenance, evaluation of text classification pipelines in the legal domain.
 - > python, sklearn, numpy, nltk, pytorch, transformers, BERT, flask
9. **Research Associate/ ML & Backend Engineer:** [ILSP-ATHENA](#) - Athens, Greece Feb-Dec 2019
- **R&D on Text ML:** Lead developer on multimodal topic modelling on scientific publications for the D4I research project. Pipeline maintenance and extension, administration and deployment.
 - **Result analysis and reporting:** Meta-analysis, data aggregation, visualization and presentation; indicator engineering and impact assessment. Project report compilation and authoring.
 - **System / backend administration:** VM / system management and setup, database extension / optimization.
 - > java, mallet, LDA, spring, postgres, python, sklearn, django, flask
10. **Research Associate / Lead ML Engineer:** [IIT-NCSR](#)D - Athens, Greece Jun 2016 - Sep 2021
- **R&D on Text ML:** Text & social media big data mining for event detection, clustering, summarization, recommendation, entity resolution, semantic search, personalization, for the BDE and Storybot research projects.
 - **System admin. & engineering:** Software container design, backend / REST development, website migrations.
 - **Academic Writing:** Publication authorship, experiment planning, execution, automation and analysis.
 - **Community management:** Organization of the internal REPR and CAKT research groups
 - > java, docker, cassandra, spark, bash, jax-rs, pyinsect, NGG, glassfish
11. **Research Associate / Lead ML Engineer:** [ITI-CERTH](#) - Thessaloniki, Greece Feb 2014 - Sep 2015
- **R&D on CV:** Visual descriptor engineering for the LinkedTV and ForgetIT projects; Lead development, design and CPU/GPU optimization of video concept detection, image retrieval, search and visualization pipelines.
 - **R&D on Deep CV:** Research on deep learning methods for video concept detection with DCNNs. Lead design, development and maintenance of retrieval / search DCNN pipelines for real-time execution.
 - **Academic Writing:** Publication authorship, experiment planning, execution, automation and analysis.
 - > C++, matlab, opencv, libsvm/linear, caffee, matconvnet, DCNN, openmp, cuda

ACADEMIC / SCIENTIFIC ACTIVITIES



- **Teaching / Supervision:**
 - Co-supervision of ML-related BSc / MSc theses and Internships at NCSR D 2017-2021
 - Student group theoretical / technical support, coordination and organization at NCSR D 2017-2021
 - Scientific lectures and presentations on the NCSR D CAKT and REPR research groups 2017-2019
 - Course assistant (Data Structures, OOP, SoftEng for Networks Applications, Data Mining) at UoA 2015-2020

• Conference / Event facilitation:

- Workshop organizer / chair (MultiLing 2019, FNP-FNS 2020-2023)
- Program Committee (AAACL-IJCNLP2020, SLT 2021, FNP-FNS 2021-23, SDPRA 2021, IAAI 2024-25)
- Paper Reviewing (ICTAI, ACL, MLj, Clj, SLSP, CSL, openreview, CSET, etc.)
- Technical support (Multiling 2017, AI4EU Athens), research proposal evaluation (AI4Copernicus)

• Seminars / Workshops / Courses:

- Multiple courses on gen-AI, prompt eng., RHLF, vector-based retrieval etc., [deeplearning.ai](#) 2023 - present
- Courses / workshops on AI Safety, DL, MARL, DRL ([AGISF](#), [AISC](#) 2022 cohorts), EAC / BDI, virtual Jan-June 2022
- Reinforcement Learning / DRL courses (2), Coursera, Huggingface 2022-2023
- “Deep Learning in NLP” summer school at RANLP 2019 Sep 2019
- Academic CompSci seminars (5) and ML/RL workshops (2), DIT UoA, DECE TUoC 2013-2018

PUBLICATIONS



• Journals:

1. N. Pittaras, G. Giannakopoulos, P. Stamatopoulos, V. Karkaletsis, “Content-based and Knowledge-enriched Representations for Classification Across Modalities: a Survey”, ACM Computing Surveys, 2023 [📄](#).
2. N. Pittaras, G. Giannakopoulos, G. Papadakis, V. Karkaletsis, “Text classification with semantically enriched word embeddings”, JNLE Special Issue: Informing Neural Architectures for NLP with Linguistic and background Knowledge, 2020 [📄](#).
3. F. Markatopoulou, V. Mezaris, N. Pittaras, I. Patras, “Local Features and a Two-Layer Stacking Architecture for Semantic Concept Detection in Video”, IEEE TETC, 2015 [📄](#).

• Conferences / Workshops (sampled out of > 25 total – full list [here](#)):


1. N. Pittaras, and McGregor, S. “A Taxonomic System for Failure Cause Analysis of Open Source AI incidents”, SafeAI Workshop, AAAI 2023, Wahsington DC [📄](#).
2. N. Pittaras “A Cooperative Reinforcement Learning Environment for Detecting and Penalizing Betrayal”, MLSafety Workshop, NeurIPS 2022, virtual [📄](#).
3. N. Pittaras, V. Karkaletsis, “A study of semantic augmentation of word embeddings for extractive summarization”, Multiling Workshop, RANLP2019, Varna, Bulgaria [📄](#).
4. N. Pittaras, G. Papadakis, G. Stamoulis, G. Argyriou, E. K. Taniskidou, E. Thanos, G. Giannakopoulos, L.Tsekouras, E. Koubarakis, “GeoSensor: Semantifying Change and Event Detection over Big Data”, SAC 2019, Limassol, Cyprus [📄](#).
5. N. Pittaras, F.Markatopoulou, V.Mezaris, I.Patras, “Comparison of Fine-tuning and Extension Strategies for Deep Convolutional Neural Networks”, 23rd International Conference on Multimedia Modeling, Reykjavik, Iceland, Jan 2017 [📄](#).

• Book chapters:

1. N. Pittaras, S. Montanelli, G. Giannakopoulos, A. Ferrara, V. Karkaletsis, “Crowdsourcing in Single-document Summary Evaluation: the Argo Way”, Multilingual Text Analysis: Challenges, Models, Approaches, World Scientific Publishers, 2020 [📄](#).
2. G. Giannakopoulos, G. Kiomourtzis, N. Pittaras, V. Karkaletsis, “Scaling and semantically enriching language-agnostic summarization”, Trends and Applications of Text Summarization Techniques, 2019 [📄](#).

SKILLS



- **programming:** python, java, \LaTeX , bash, C, C++, Matlab, gdscrip
- **ml:** pytorch, sklearn, huggingface, tensorflow, opencv, pettingzoo, gym, sb3, rllib, ml-agents, captum, caffee
- **ml tools:** pt-lightning, keras, docker, mlfow, dvc, wandb, clearml, ray/tune, tensorboard, grafana
- **backend:** cassandra, spark, mysql, postgres, influxdb, elasticsearch, GCP, mongo, sparql
- **web, docs, teams:** html, tomcat, hugo, flask, restx, Jira, Trello, Slack, clickUp, Confluence, sphinx
- **other:** linux , git, maven, django, pdb, blender, godot, colab, gradescope, airtable, RDF, owl
- ◊ **languages:** Greek (Mother tongue), English (Fluent, Cambridge CPE), German (Basic)
- **misc:** trained lifeguard, licensed to drive cars and speedboats.

HOBBIES / INTERESTS



- Long distance running, cycling, swimming, video games & indie gamedev, popular science (math, physics).
- Musical instruments (guitar, piano, bass, ocarina), singing, song writing, recording.