Nikiforos Pittaras
Machine Learning researcher

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🌐 https://npit.github.io

EDUCATION

- **PhD in Machine Learning**: (DIT-UoA)   2017-present

  Joint industrial 4-year PhD programme, supervised by P. Stamatopoulos from the Dept. of Informatics & Telecommunications (DIT), of the University of Athens (UoA) and V. Karkaletsis from the Informatics and Telecommunications Institute, NCSR "Demokritos" (IIT-NCSRD)

- **MSc in Signal/Information Processing & Learning**: (DIT, UoA)   2015-2018

  2-year Master's degree, focused on Signal Processing and Machine Learning.

- **BSc in Computer Science**: (DCSE-UoI)   2005-2013

  4-year Bachelor's degree (Ptychion), with a focus on Machine Learning, AI and VLSI. Grade 7.08.

EXPERIENCE

- **Research associate**: IIT-NCSRD   2016-present

  Lead developer and researcher at the "BigDataEurope" and "Storybot" projects, focusing on text mining and event detection (ED), including but not limited to:

  - **Text Machine Learning Research**: Lead developer on text & social media mining, processing and event detection systems. Maintenance, extension, scaling to big data, optimization and deployment. Research on event detection, document clustering and summarization, recommendation, entity resolution and personalization systems. Development and deployment of relevant systems.

  - **System administration & engineering**: VM and software virtualization containers design, deployment and maintenance. RESTful API frontend/backend development, website deployment and migration.

  - **Academic Publications**: Authorship and management of publications, large-scale experiment planning, execution, automation and analysis. Reviewer on machine learning scientific conference submissions .

  - **Community management**: Lecture group planning, administration, organization and mailing list management of the Content Analysis and Knowledge Technologies (CAKT) and REPR research groups. Presentations on machine learning on school educational visits.

  - **Technical support**: Software development, support and technical assistance in multiple other institute projects.

- **Research associate**: ITI-CERTH   February 2014 - September 2015

  Lead developer and researcher at the "Linked TV: Television linked to the web" and "ForgetIT" projects, at the Information Technologies Institute (ITI), of the National Center for Research and Technology, Hellas (CERTH). Thermi, Greece . Lead developer and researcher, focusing on video concept detection (VCD).

  - **Visual descriptors Research**: Research focusing on binary descriptors, colour extensions, normalization and clustering. Lead developer on a VCD pipeline end-to-end (feature extraction, processing, classification, visualization) modular design, implementation from scratch, maintenance and expansion and optimization. Spatiotemporal optimization.

  - **Deep Learning Research**: Research on deep Learning with deep convolutional neural networks (DCNNs), focusing on training, fine-tuning, network topology and architecture optimization, transfer and meta-learning. Lead developer of a DCNN-based real time VCD system, including design, development from scratch, maintenance, expansion and optimization.

  - **Academic Publications**: Authorship and management of publications, large-scale experiment planning, execution, automation and analysis. Reviewer on machine learning scientific conference submissions.

  - **Technical support**: Software development, support and technical assistance in multiple other institute projects.

- **Freelancer**: Naxos, Ioannina, Thessalonika, Athens   2000-2013

  Freelance jobs, including tutoring on physics and mathematics, undertaking computer science university projects assignments, Greek to / from English translations, automobile dealership secretary, speedboat operator and others. Naxos, Athens, Ioannina, Thessalonika (2000-2013).

Academic Projects

- **Selected MSc course projects**:

  ⋄ Thesis: Multimodal video /image classification and description using deep neural networks. Supervised by T. Giannakopoulos and S. Perantonis. Grade 10.0.

  ○ Semantic data and geo/spatiotemporal data handling, ontology engineering. *(Knowledge Technologies)*

  ○ Design, development, implementation and optimization of voice user interfaces. *(Voice Technologies)*

  ○ Implementation, tuning and large-scale experiments with multiple classification models (e.g. RBF, Bayesian and neural nets) in Weka and Matlab. Implementation of the RLS, Robbins-Monroe and LS denoising algorithms. Study and presentation of an AAAI-2016 conference submission.
  (Pattern Recognition, Machine Learning, Advanced AI)

  ○ Implementation of visual feature extractors, statistical analysers and classification algorithms. Design, implementation, documentation and IEEE-style paper authorship on the Stauffer-Grimson background subtraction method. *(Medical image analysis and image processing)*

  ○ Bibliographical research study on microcontroller and microcomputer platforms. *(Real time systems)*

  ○ Implementation of OO design patterns, multi-threading, aspect-oriented approaches and memory visualization. GC and memory management performance tests on Java and C++. Study and presentation of an OOPSLA'16 submission. *(Advanced programming techniques course)*

- **Selected BSc course projects**:

  ⋄ Thesis: Image registration using unified particle swarm optimization.
  supervisors: C. Nikou, K. Parsopoulos. Grade 10.0.

  ○ Implementation of classifiers (e.g. SVM, Bayes, K-means, MLPs). Implementation of and various heuristic and global optimization search algorithms.
  (Pattern recognition, computational intelligence, AI courses)

  ○ Implementation, design and documentation of graphical class analyser tools, a full compiler for a toy language, relational and ER-modeled databases.
  (Software engineering, OO programming, compilers, database systems courses)

  ○ Implementation of image processing tools, video codecs, video restoration and compression scripts, 2D and 3D games in openGL and X11, drawing GUI applications.
  (Digital image processing, multimedia, computer graphics courses)

  ○ Design, simulation and analysis of digital and analog circuits, up to a very large integration scale. Simulation of microprocessors and assembly programming.
  (Digital design, microelectronics, integrated digital circuits, VLSI systems, computer architecture courses)

- **Seminars and workshops**:

  ○ Weekly academic seminars, lectures and presentations hosted by the CAKT and SKEL research groups (IIT-NCSRD, July 2016 - present).

  ○ "Object-centric machine learning", seminar with L. Guibas from Stanford University (DIT-UoA, May 2016).

  ○ "A Value-Based Approach to Hardware Acceleration of Deep Learning", seminar with A. Moshovos from University of Toronto (DIT-UoA, May 2016).

  ○ "Image processing with MATLAB", seminar with Mentor Hellas corp. (DIT-UoA, February 2016).

  ○ "CretaMASSS-2013 / HAISS'13-Agents", summer school on multi-agent systems and artificial intelligence (TUoC, summer 2013).

PUBLICATIONS

- **Journal publications**:

  1. F. Markatopoulou, V. Mezaris, N. Pittaras, I. Patras, "Local Features and a Two-Layer Stacking Architecture for Semantic Concept Detection in Video", IEEE Trans. on Emerging Topics in Computing, March 2015 (ieee) (pdf).

- **Conference publications**:

  1. N. Pittaras, G. Giannakopoulos, L. Tsekouras, I. Varlamis, "Document clustering as a record linkage problem", DocEng'18, Halifax, Nova Scotia, Canada, 2018.

  2. G. Argyriou, G. Papadakis, G. Stamoulis, E. K. Taniskidou, N. Pittaras, G. Giannakopoulos, S. Albani, M. Lazzarini, E. Angiuli, A. Popescu, A. Argyridis and M. Koubarakis. "GeoSensor: On-line Scalable Change and Event Detection over Big Data", The Web Conference 2018, Lyon, France, April 2018. (pdf).

  3. A. Soeren et al. "The BigDataEurope Platform - Supporting the Variety Dimension of Big Data", International Conference on Web Engineering, Cham, 2017 (springer).

  4. 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 (springer) (pdf).

  5. F. Markatopoulou, A. Ioannidou, C. Tzelepis, T. Mironidis, D. Galanopoulos, S. Arestis-Chartampilas, N. Pittaras, K. Avgerinakis, N. Gkalelis, A. Moumtzidou, S. Vrochidis, V. Mezaris, I. Kompatsiaris, I. Patras, "ITI-CERTH participation to TRECVID 2015", Proc. TRECVID 2015 Workshop, Gaithersburg, MD, USA, Nov. 2015 (nist)(pdf).

  6. G. Kalpakis, T. Tsikrika, F. Markatopoulou, N. Pittaras, S. Vrochidis, V. Mezaris, I. Patras, I. Kompatsiaris, "Concept Detection on Multimedia Web Resources about Home Made Explosives", Proc. Int. Workshop on Multimedia Forensics and Security (MFSec), held in conjunction with the 10th Int. Conf. on Availability, Reliability and Security (ARES), Toulouse, France, Aug. 2015 (ieee) (pdf).

  7. F. Markatopoulou, N. Pittaras, O. Papadopoulou, V. Mezaris, I. Patras, "A Study on the Use of a Binary Local Descriptor and Color Extensions of Local Descriptors for Video Concept Detection", Proc. 21st Int. Conf. on MultiMedia Modeling (MMM'15), Sydney, Australia, January 2015 (springer) (pdf).

  8. N. Gkalelis, F. Markatopoulou, A. Moumtzidou, D. Galanopoulos, K. Avgerinakis, N. Pittaras, S. Vrochidis, V. Mezaris, I. Kompatsiaris, I. Patras, "ITI-CERTH participation to TRECVID 2014", Proc. TRECVID 2014 Workshop, Orlando, FL, USA, November 2014 (nist) (pdf).

- **Book chapters**:

  1. N. Pittaras, S. Montanelli, G. Giannakopoulos, A. Ferrara, V. Karkaletsis, "Crowdsourcing in Single-document Summary Evaluation: the Argo Way", Automatic Text Extraction, World Scientific Publishers, (to appear).

DISTINCTIONS

- S. Niarchos Industrial PhD. scholarship (2017).

TEACHING

- Course Assistant

  ○ Data Structures and Programming Techniques, DIT, UoA, Spring semesters 2016, 2017).

  ○ Object-Oriented Programming, DIT, UoA, Spring semester 2018).

Tech Skills

- Proficient with:

    - *languages:* C, C++, Java, Matlab, python, bash, LaTeX
    - *APIs & libraries:* tensorflow, (num/sci)py, caffe, matconvnet, lib(svm/linear), openGL, openCV
    - *IDEs, frameworks & SDKs:* NetBeans, Code::Blocks, qtCreator, Visual Studio 2010 / 2013, intelliJ IDEA, CLion, PyCharm, sublime-text, maven
    - *big data & databases:* Cassandra, SPARK, MYSQL
    - *semantic web:* RDF, (geo/st)SPARQL, OWL
    - *other:* git, vim, (spac)emacs, zsh, docker, linux

- Familiar with:

    - *languages:* scala, perl
    - *web :* HTML, CSS, javascript, apache (http server/tomcat), glassfish, liferay, hugo, flask, Jersey
    - *APIs & libraries:* X, THREE.js, CUDA, Weka, openGL, glut, SDL2, android
    - *IDEs & SDKs:* Eclipse, DevC++, kDevelop, Godot, protege, Android SDK, Unity 3D, Blender, CSLU RAD, IBM Websphere Voice Toolkit
    - *circuit design and simulation:* VHDL, Altera Quartus II, Capture CIS, Pspice
    - *databases:* mongoDB
    - *other:* QGIS, gdb

Language skills

- Greek (Mother tongue).

- English (Fluent: Cambridge FCE, CAE and CPE (grades A, A and C respectively)).

- German, French (Basic).

Miscellaneous skills

- Licensed to drive cars and speedboats.

- Completed lifeguard theoretical and practical training at PA.S.X.NA. lifeguard school.

Hobbies and interests

- Long distance running and cycling, swimming.

- Musical instruments (guitar, piano, some bass and ocarina), singing, song writing.

- Number theory, modern physics.

- Video games, indie game development.