Giorgos Bouritsas, PhD

Machine Learning Researcher
Postdoctoral Fellow – Archimedes/Athena Research Centre
Adjunct Lecturer – University of Athens
Nationality: Greek
Date of Birth: 26/11/1993
Address: 1 Artemidos Street, Marousi, Athens, Attica, 151 25
Email: g.bouritsas@athenarc.gr, gbouritsas@di.uoa.gr
Mobile: +30 6980436883
Website: http://users.uoa.gr/~gbouritsas/

Scholar
GitHub
LinkedIn

Research Interests

- Geometric Deep Learning & Graph Neural Networks
- Weight Space Learning & Metanetworks
- AI Auditing & Trustworthy AI - transparency, fairness, safety & white-box analysis
- Generative Models
- Self-supervised Learning

Education

Imperial College London, Department of Computing — London, UK
PhD in Computing (Machine Learning) — Oct. 2018 - April 2023

- Research area: Graph Neural Networks & Geometric Deep Learning.
- Thesis: "*Neural function approximation on graphs: shape modelling, graph discrimination & compression*" [link]
- Supervisors: Prof. Michael Bronstein, Prof. Stefanos Zafeiriou

National Technical University of Athens — Athens, Greece
Diploma (BEng & MEng) in Electrical and Computer Engineering — Oct. 2011 - July 2017

- *GPA: 8.66/10 (First-Class)*, Specialisation: • Signals, Control and Robotics • Computer Systems
- Thesis: "*Multimodal video understanding with weakly supervised techniques*"[link]
- Supervisor: Prof. Petros Maragos

Experience

Visible Machines – AI Research & Social Awareness Center — Athens, Greece
Position: Co-Founder & Director — July 2025 – present
Website: visiblemachines.gr

- **Role & activities**: Leading interdisciplinary research on AI auditing, transparency and the societal implications of AI systems; science communication (opinion pieces, website); strategic planning, funding acquisition and partnership development.
- **Current research projects**: Auditing and safety of AI systems.
  - Automated modification of neural network parameters via metanetworks for regulatory compliance and fairness;
  - Automated detection of biases in text-to-image generative models.

Archimedes AI – Athena RC & Department of Informatics, Univ. of Athens Athens, Greece
Position: Postdoctoral Research Fellow July 2023 – present

- **Research areas & example projects:**
  - Weight Space Learning (e.g. *Scale Equivariant Graph Metanetworks* - NeurIPS'24 **Oral**, top 1%).
  - AI auditing (e.g. *Metanetworks as Regulatory Operators* - under review).
  - Self-Supervised Learning (e.g. *Decoupled Hyperspherical Energy Loss* - ICML'24).
- **Other activities**: teaching, student supervision, proposal writing, academic service.
- Advisor: Prof. Yannis Panagakis

Google DeepMind - Structured Intelligence Team London, UK
Position: Research Scientist Intern May 2022 – Oct. 2022

- **Research project:** Data-driven simulation of continuous dynamical systems.
- Hosts: Dr. Pete Battaglia and Dr. Charlie Nash

Imperial College London London, UK
Position: PhD candidate Oct. 2018 – April 2023

- **Primary research projects**: Geometric Deep Learning & Graph Neural Networks
  - *Spiral Convolutions* - ICCV'19: permutation-sensitive GNNs - learning on graph signals & 3D shape modelling.
  - *Graph Substructure Nets* - TPAMI'22: GNNs with substructure encodings - learning on graph spaces & graph discrimination.
  - *Partition and Code* - NeurIPS'21: substructure-based dictionary coding - graph generative models & lossless compression.

Signal Processing Laboratory (LTS2) – EPFL Lausanne, Switzerland
Position: Visiting PhD candidate Sep. 2020 – Feb. 2021

- **Research projects:**(1) Data-driven graph compression, (2) Study of GNN implicit inductive biases.
- Host: Dr. Andreas Loukas

Laboratory for Imaging Genetics – KU Leuven Leuven, Belgium
Position: Academic Visitor Spring 2019

- **Research project:** Geometric deep learning algorithms for facial reconstruction from genetic data - multiple publications.
- Host: Prof. Peter Claes

Integrated Systems Laboratory (ISL) – NCSR "Demokritos" Athens, Greece
Position: Research Associate (Machine Learning / Computer Vision Engineer) Jan. 2018 – July 2018

- **Research project:** Anomaly detection for time-series data (motion trajectories) using sequence-to-sequence neural networks - AVSS'19.

CVSP Lab – National Technical University of Athens Athens, Greece
Position: Research Assistant Sep. 2017 – Dec. 2017

- **Research project:** Weakly supervised methods for multimodal visual concept classification in video–language settings - CVPR'18.

Image Processing Group (GPI) – Universitat Politècnica de Catalunya Barcelona, Spain
Position: Research Assistant (Erasmus$^+$ Exchange) Feb. 2016 – July 2016

- **Research project:** Face verification using Siamese networks; UPC submission to MediaEval 2016
- Host: Prof. Ramon Morros

Teaching & Supervision

Department of Informatics, University of Athens Athens, Greece
Position: Adjunct Lecturer Oct. 2025 – Feb 2026
Programme: MSc in Data Science & Information Technologies

- **MSc Course**: *Machine Learning* (joint programme: DI/UoA, Athena RC & BRFAA)
- **Independent Instructor**: Organisation and design of the course; supervision and evaluation of group projects within the course. Mandatory first-semester course, 13 weeks, 3 hours of lectures per week, ~50 students.

NCSR "Demokritos" Athens, Greece
Position: Adjunct Lecturer Feb. 2024 – Oct. 2025
Programme: MSc in Artificial Intelligence

- **MSc Course**: *Deep Learning* (joint programme: NCSR "Demokritos" & University of Piraeus)
- **Independent Instructor**: Co-organisation and co-teaching of the course; supervision and evaluation of group projects within the course. Mandatory second-semester course, 8 weeks, 22 hours total lecture hours, ~30 students, 2 years.

Imperial College London London, UK
Position: Graduate Teaching Assistant Oct. 2018 – Dec. 2021

- **MSc courses**: *Mathematics for Machine Learning* (2018, 2019, 2021); *Deep Learning* (2019, 2020)
- **Teaching Support:** Design and instruction of seminars (tutorials); design and grading of assignments (coursework).

PhD candidate co-supervision: 5 students: G. Kalogeropoulos, P. Koromilas, M. Plitsis, A. Georgiou, A. Zamanos (Archimedes/Athena RC & University of Athens).
MSc thesis supervision: 2 students: Y. Savvas, S. Georgoulas (NCSRD).
Internship supervision: 1 MSc student: O. Liagkas (Archimedes/Athena RC).
MSc thesis examiner: 6 theses (EPFL, NCSRD, UoA).

Other Scientific & Research Activities

FELLOWSHIPS & AWARDS

H.F.R.I 4th call for Postdocs – 1st Place, Score: 98/100 (Mathematics & Information Sciences) 2025
Outstanding/Best reviewer awards, NeurIPS'21,'24, ICML'22,'24, LOG'23 2021-2024
Doctoral Scholarship Award, Imperial College London 2018-2022
Imperial College, Computing PhD poster competition 2nd prize July 2021
Travel awards: ICCV (Seoul, South Korea), IPAM, UCLA (Los Angeles, CA, USA) 2019
NTUA publication award (CVPR '18) best undergrad/master's students publications July 2018

INVITED TALKS

Neural graph function approximation "Archimedes" summer school, July 2023 [slides]
Graph Substructures vs Graph Isomorphism LoG Athens meetup (virtual), Feb. 2023 [slides]
Partition and Code LoGaG reading group (virtual), Sep. 2021 [slides]
The expressive power of MPNNs LOGML summer school (virtual), July 2021
Spiral Convolutional Networks DLBCN symposium, Barcelona, Dec. 2019 [slides]
Learning to Generate Shapes with Geometric DL, ICIAMW, Valencia, July 2019 [slides]
Tutorial on 3D Deep Learning, SGP Graduate School, Milan, July 2019 [slides] [video]

ACADEMIC SERVICE & COMMUNITY

Reviewer:

- NeurIPS '20,**'21*** '22, '23, **'24***, '25
- ICML **'22*** '23,**'24***, '25, '26
- ICLR '22,'24,'25
- Learning on Graphs conference (LoG) '22,**'23***,'24
- ICASSP '23
- Journals: TPAMI (>x3), TMLR (x1), Computer Graphics Forum (x1) , Signal Processing (x1).

(* *outstanding reviewer*)
Organising & Technical Committee: "*Neural Network Weights as a New Data Modality*", ICLR workshop, Singapore, 2025. Member of the organising team; preparation of the workshop program and call for papers; proposal writing; service on the technical committee (area chair).
Community: ELLIS society, member

OTHER SCIENTIFIC CONTRIBUTIONS

Submitted Patent: M. Bronstein, S. Gong, M. Bahri, **G. Bouritsas**, S. Zafeiriou, S. Bokhnyak "Generative geometric neural networks for 3D shape modelling". *US Patent App. 16/869,294, 2021*

Research Grants

RESEARCH FUNDRAISING

Hellenic Foundation for Research & Innovation (H.F.R.I.) Athens, Greece
Position: Principal Investigator & Postdoctoral Fellow expected April 2026
Project: NNs as Architects (ARCHNETS)

- Host institution: Department of Informatics, University of Athens
- Funding scheme: 4th Call for H.F.R.I. Research Projects supporting Postdoctoral Researchers
- Total budget: 93.600,00 €

European Union – NextGenerationEU Athens, Greece
Position: Postdoctoral Research Fellow July 2023 – present
Project: Higher-Order Deep Learning: Learning to analyze & generate multimodal data of arbitrary underlying Geometry

- Host institution: Archimedes Unit, Athena Research Center, Athens, Greece
- Funding scheme: National Recovery and Resilience Plan "Greece 2.0"
- PI: Yannis Panagakis

PARTICIPATION IN RESEARCH GRANTS

European Research Council (ERC) London, UK
Position: PhD Student Oct. 2018 – Feb. 2023
Project: Deep LEarning on MANifolds and Graphs (LEMAN)

- Host institution: Imperial College London, London, UK
- Funding scheme: ERC-2016-COG (ERC Consolidator Grant)

– PI: Michael Bronstein
– Total budget: 1.997.875,00€

Swiss National Science Foundation (SNF) Lausanne, Switzerland
Position: Visiting PhD Student – External Collaborator Sep. 2020 – Dec. 2021
Project: Deep Learning for Graph-Structured Data

– Host institution: École Polytechnique Fédérale de Lausanne (EPFL), Lausanne, Switzerland
– Funding scheme: Ambizione
– PI: Andreas Loukas
– Total budget: 581,578 CHF

European Commission Athens, Greece
Position: Research Associate (ML & CV Engineer) Jan. 2018 – July 2018
Project: Optimising Time-to-FLY and Enhancing Airport SECurity (FLYSEC)

– Host institution: National Center for Scientific Research "Demokritos", Athens, Greece
– Funding scheme: H2020 RIA – Research and Innovation Action
– Total budget: 4.141.375,00 €, Host budget: 722.750,00 €

Publications

Summary: 1 PhD dissertation, 1 Master's thesis, 10 publications in international conferences (8 in top-tier conferences in the field of AI (NeurIPS, ICML, CVPR, ICCV, ECCV), 6 papers in scientific journals (2 in a top-tier journal in AI: IEEE TPAMI), 3 preprints (submitted, under review) that have been presented at international workshops of top-tier conferences (NeurIPS, ICLR), and 1 additional workshop publication. **Total publications: 22. Total citations: >1400, h-index: 13.** The published work can also be found on Google Scholar. Below, the symbol "*" denotes equal contribution.

Theses

1. PhD thesis: **G. Bouritsas** Neural function approximation on graphs: shape modelling, graph discrimination & compression, *Doctoral dissertation, Imperial College London, 2023.* https://spiral.imperial.ac.uk/entities/publication/9bf8a994-f2f2-440b-8144-3e2ea6bd02fb

2. BEng & MEng thesis: **Bouritsas G.** Multimodal video understanding with weakly supervised learning techniques, *Thesis, National Technical University of Athens, 2017. https://dspace.lib.ntua.gr/xmlui/handle/123456789/45856*

Conferences

1. **Selected:** I. Kalogeropoulos*, **G. Bouritsas***, Y. Panagakis, Scale Equivariant Graph Metanets, *NeurIPS '24* ***Oral.*** https://doi.org/10.52202/079017-3391

2. **Selected:** P. Koromilas*, **G. Bouritsas***, T. Giannakopoulos, M. Nicolaou, Y. Panagakis, Bridging Mini-batch and Asymptotic Analysis in Contrastive Learning: From InfoNCE to Kernel-based Losses, *ICML '24.* https://dl.acm.org/doi/10.5555/3692070.3693082.

3. R. A. Potamias, **G. Bouritsas**, S. Zafeiriou, Revisiting Point Cloud Simplification: A Learnable Feature-Preserving Approach, *ECCV '22* . https://doi.org/10.1007/978-3-031-20086-1_34.

4. **Selected: G. Bouritsas**, A. Loukas, N. Karalias, M. Bronstein, Partition and Code: Learning How to Compress Graphs, *NeurIPS '21.* https://dl.acm.org/doi/10.5555/3540261.3541683

5. S. S. Mahdi, N. Nauwelaers, P. Joris, **G. Bouritsas**, et al., 3D Facial Matching by Spiral Convolutional Metric Learning and a Biometric Fusion-Net of Demographic Properties, *ICPR '20.* https://doi.org/10.1109/ICPR48806.2021.9412166

6. R. A. Potamias, J. Zheng, S. Ploumpis, **G. Bouritsas**, E. Ververas, S. Zafeiriou, Learning to Generate Customized Dynamic 3D Facial Expressions, *ECCV '20* . https://doi.org/10.1007/978-3-030-58526-6_17

7. **Selected:** G. Chrysos, S. Moschoglou, **G. Bouritsas**, Y. Panagakis, J. Deng, S. Zafeiriou, Π-nets: Deep Polynomial Networks, *CVPR '20* . https://doi.org/10.1109/cvpr42600.2020.00735

8. **Selected:** **G. Bouritsas***, S. Bokhnyak*, S. Ploumpis, S. Zafeiriou, M. Bronstein, Neural 3D Morphable Models: Spiral Convolutional Nets for 3D Shape Representation Learning and Generation, *ICCV '19 ; ICLR Workshop '19*. https://doi.ieeecomputersociety.org/10.1109/ICCV.2019.00731

9. **G. Bouritsas**, S. Daveas, A. Danelakis, C. Rizogiannis, S. Thomopoulos, Automated Real-Time Anomaly Detection in Human Trajectories Using Sequence-to-Sequence Networks, *AVSS '19*. https://doi.org/10.1109/AVSS.2019.8909844

10. **G. Bouritsas**, P. Koutras, N. Zlatintsi, P. Maragos, Multimodal Visual Concept Learning with Weakly Supervised Techniques, *CVPR '18* . https://doi.org/10.1109/cvpr.2018.00516

Journals

1. A. Zamanos, P. Koromilas, **G. Bouritsas**, P. Kastritis, Y. Panagakis, Cryo-EMMAE: Self-Supervised Particle Picking in Cryo-EM Imaging, *Cell Reports Methods 2025, ICML'24 Workshop*. https://doi.org/10.1016/j.crmeth.2025.101089

2. S. S. Mahdi, E. Caldeira, H. Matthews, M. Vanneste, N. Nauwelaers, M. Yuan, **G. Bouritsas**, G. S. Baynam, P. Hammond, R. Spritz, O. D. Klein, M. Bronstein, B. Hallgrimsson, H. Peeters, P. Claes. "A 3D clinical face phenotype space of genetic syndromes using a triplet-Based Singular Geometric Autoencoder", *IEEE Access 2024*. https://doi.org/10.1109/ACCESS.2024.3524428

3. S. S. Mahdi, H. Matthews, N. Nauwelaers, M. Vanneste, S. Gong, **G. Bouritsas**, G. Baynam, P. Hammond, R. Spritz, O. Klein, B. Hallgrimsson, H. Peeters, M. Bronstein, P. Claes. "Multi-Scale Part-Based Syndrome Classification of 3D Facial Images", *IEEE Access 2022*. https://doi.org/10.1109/ACCESS.2022.3153357.

4. **Selected:** **G. Bouritsas**, F. Frasca, S. Zafeiriou, M. Bronstein, Improving Graph Neural Network Expressivity via Subgraph Isomorphism Counting, *IEEE TPAMI '22 ; ICML Workshop '20*. https://doi.org/10.1109/TPAMI.2022.3154319

5. **Selected:** G. Chrysos, S. Moschoglou, **G. Bouritsas**, J. Deng, Y. Panagakis, S. Zafeiriou, Deep Polynomial Neural Networks, *IEEE TPAMI '21* . https://doi.org/10.1109/TPAMI.2021.3058891

6. S. S. Mahdi, N. Nauwelaers, P. Joris, **G. Bouritsas**, S. Gong, S. Walsh, M. D. Shriver, M. Bronstein, P. Claes. "Matching 3D facial shape to demographic properties by geometric metric learning: A part-based approach", *IEEE TBIOM '21*. https://doi.org/10.1109/TBIOM.2021.3092564

Pre-prints & Workshops

1. **Selected:** I. Kalogeropoulos, **G. Bouritsas**, Y. Panagakis, Metanetworks as Regulatory Operators: Learning to Edit for Requirement Compliance, *ICLR'25 Workshop, under review*. https://arxiv.org/pdf/2512.15469

2. **Selected:** M. Plitsis, **G. Bouritsas**, V. Katsouros, Y. Panagakis, Exposing Hidden Biases in Text-to-Image Models via Automated Prompt Search, *ICLR'25 Workshop, under review*. https://arxiv.org/pdf/2512.08724

3. P. Koromilas, E. Georgiou, **G. Bouritsas**, T. Giannakopoulos, M. Nicolaou, Y. Panagakis, A principled framework for multi-view contrastive learning, *NeurIPS'25 Workshop, under review*. https://arxiv.org/pdf/2507.06979

4. M. India, G. Martí, C. Cotillas, **G. Bouritsas**, E. Sayrol, J. R. Morros, J. Hernando, UPC System for the 2016 MediaEval Multimodal Person Discovery in Broadcast TV Task, *MediaEval '16*. http://ceur-ws.org/Vol-1739/MediaEval_2016_paper_40.pdf

Skills

- **Machine Learning:** PyTorch, PyTorch Geometric, scikit-learn, Jax, Haiku, Keras.
- **Programming:** Python, MATLAB, C.
- **Tools:** WandB, AWS.
- **Languages:** Greek (Native), English (Fluent), Spanish (Intermediate), French (Basic).