George Panagopoulos

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Experience

- **University of Luxembourg**, Postdoctoral Scientist, Luxembourg (01.2024 - Current)
- **Amazon**, Applied Scientist, Luxembourg (04.2022 - 06.2023)
  - Worked on operations research projects, revolving around **routing, scheduling and forecasting** algorithms. Developed methodologies based on machine learning and **linear programming** to improve the transportation network's efficiency.
  - Designed and ran large-scale experiments to quantify the projects' success.
  - Managed multiple stakeholders from varying backgrounds (business, science, and project managers) to satisfy the dependencies and facilitate the projects' growth.
- **Ecole Polytechnique Informatics Laboratory (LIX)**, Research Engineer, Paris, France (06.2018 - 03.2022)
  - Conducted research on **spatiotemporal forecasting** using **graph neural networks** and **meta-learning** with applications in epidemic prediction and control.
  - Proposed novel solutions for **combinatorial optimization** problems using **mult-task, graph, and reinforcement learning**, with applications in social networks.
  - Combined **transformers** and **graph analytics** to analyze big data from social media and bibliographical databases.
  - Used **natural language processing** on French legal documents to rank lawyers.
  - Used **graph matching** algorithms for merging medical ontologies.
  - Teaching: Advanced Learning for Text and Graph Data, Machine Learning in Network Science, Virus Propagation, Artificial Intelligence Executive Education.
- **University of Houston, Computational Physiology Lab**, RA/TA, Houston, TX (08.2016 - 05.2018)
  - Developed a **forecasting** technique for driving anomalies using signals from wearable sensors on the driver, thermal imaging, and automotive sensors.
  - Conduct **statistical analysis** and **causal inference** on behavioral experiments to quantify the effect of stress on the performance of resident surgeons.
  - Utilized **multi-task** learning on EEG signals from brain-computer interfaces experiments to reduce inter-subject variance.
  - Teaching: Statistical Methods in Research & Software Engineering.
- **National Center for Scientific Research Demokritos**, Research Assistant, Athens, Greece (08.2014 - 07.2016)
  - Designed and ran interactive experiments and tutorials for undergraduate students, on signal processing techniques for low-cost **brain computer interfaces**.
  - Implemented web services that use **natural language processing** and unsupervised machine learning to model essays written by children, supporting three languages and facilitating Android games that enhance creativity.

Education

- **Ph.D. in Computer Science**, Ecole Polytechnique, Paris, France (01.2019 - 03.2022)
  - Thesis Title: *"Learning Influence Representations: Methods and Applications"*
  - Supervisor: Prof. Michalis Vazirgiannis , Asst Prof. Fragkiskos Malliaros
  - Coursework (Audit): Reinforcement Learning (Facebook), Machine Learning on Graphs (Deepmind)
- **Ms. in Computer Science**, University of Houston, Houston, TX (08.2016 - 05.2018)
  - Thesis Title: *"Forecasting Markers of Habitual Driving Behaviors Associated with Crash Risk"*
  - Supervisor: Prof. Ioannis Pavlidis
  - Notable Coursework: Machine Learning, Deep Learning, Database Systems, Advanced Numerical Analysis.
- **Bsc. in Informatics and Telematics**, Harokopio University of Athens, Greece (09.2010 - 07.2014)
  - Thesis Title: *"Detecting Rising Stars in Dynamic Collaborative Networks"*
  - Supervisor: Prof. Iraklis Varlamis
  - Notable Coursework: Artificial Intelligence, Data Mining, Databases, Programming (C and Java), Signals and Systems, Electronics, Telecommunication systems, Telecommunication Networks, Data Structures, Statistics, Image Processing.

Publications

1. G. Panagopoulos, N. Tziortziotis, F. Malliaros, M. Vazirgiannis. *"Learning Graph Representations for Influence Maximization"* Advances in Social Networks Analysis and Mining (**ASONAM**), 2023

2. C. Kosma, G. Nikolentzos, G. Panagopoulos, J.M. Steyaert, M. Vazirgiannis. *"Neural Ordinary Differential Equations for Modeling Epidemic Spreading"*, in **Transactions on Machine Learning Research**, 2023

3. G. Nikolentzos, G. Panagopoulos, M. Vazirgiannis. *"An Empirical Study of the Expressiveness of Graph Kernels and Graph Neural Networks"*, in International Conference on Artificial Neural Networks (**ICANN**), (2021)

4. B. Rozemberczki , P. Scherer, Y. He, G. Panagopoulos, M. Astefanoaei, O. Kiss, F. Beres, N. Collignon, R. Sarkar. *"PyTorch Geometric Temporal: Spatiotemporal Signal Processing with Neural Machine Learning Models"*. in Conference on Information and Knowledge Management (**CIKM resource track**), 2021

5. G. Panagopoulos, G. Nikolentzos, M. Vazirgiannis.*"Transfer Graph Neural Networks for Pandemic Forecasting"*, in AAAI Conference on Artificial intelligence (**AAAI**), 2021

6. G. Panagopoulos, F. Malliaros, M. Vazirgiannis. *"Multi-task Learning for Influence Estimation and Maximization"*, in **IEEE Transactions of Knowledge and Data Engineering**, 2020, 10.1109/TKDE.2020.3040028

7. G. Panagopoulos, H. Jalalzai *"Graph Neural Networks with Extreme Nodes Discrimination"*, in Deep Learning on Graphs: Methods and Applications, (**DLG@KDD**), 2020

8. P. Boniol, G. Panagopoulos, C. Xypolopoulos,R. E. Hamdani,D. R Amariles, M. Vazirgiannis. *"Performance in the courtroom: Automated processing and visualization of appeal court decisions in France"*, in Natural Legal Language Processing (**NLLP @ KDD**), 2020

9. G. Panagopoulos, F. Malliaros, M. Vazirgiannis. *"Influence Maximization using Influence and Susceptibility Embeddings"*, in AAAI International Conference on Web and Social Media (**ICWSM**), 2020

10. G. Panagopoulos, C. Xypolopoulos, K. Skianis, C. Giatsidis, J. Tang, M. Vazirgiannis. *"Scientometrics for Success and Influence in the Microsoft Academic Graph"*, in Complex Networks and Their Applications (**Complex Networks**), Lisbon, Portugal December 10-12, 2019

11. G. Panagopoulos, I. Pavlidis. *"Forecasting Markers of Habitual Driving Behaviors Associated with Crash Risk"* **IEEE Transactions of Intelligent Transportation Systems** (2019)

12. I. Pavlidis, D. Zavlin, A. Khatri, A. Wesley, G. Panagopoulos, and A. Echo. *"Absence of Stressful Conditions Accelerates Dexterous Skill Acquisition in Surgery"* **Nature Scientific Reports** 9.1 (2019):1747

13. G. Panagopoulos, F. Malliaros, M. Vazirgiannis. *"DiffuGreedy: An Influence Maximization Algorithm based on Diffusion Cascades"*, in Proc. of Complex Networks and Their Applications (**Complex Networks**), Cambridge, UK December 11-13, 2018

14. G. Panagopoulos. *"A Review of Network Inference Techniques for Neural Activation Time Series"*, Poster in Network Science (**NetSci**). Paris, France, June 11-15, 2018

15. G. Panagopoulos. *"Multi-Task Learning for Commercial Brain Computer Interfaces"*, in Proc. of IEEE BioInformatics and BioEngineering (**BIBE**), Washington DC, USA, October 23-25, 2017

16. G. Panagopoulos, G. Tsatsaronis, and I. Varlamis. *"Detecting Rising Stars in Dynamic Collaborative Networks"* **Elsevier Journal of Informetrics** 11.1 (2017): 198-222.

17. G. Panagopoulos, C. Palmer. *"A Specialized Interactive Data Application for EEG Based Sleep Studies"*, ADH Workshop in Pervasive Technologies Related to Assistive Environments (**PETRA**), Rhodes, Greece, June 21-23, 2017

18. G. Panagopoulos, P. Karampiperis, A. Koukourikos, S. Konstantinidis. *"Creativity Profiling Server: Modelling the Principal Components of Human Creativity over Texts"*, DECAT Workshop in User Modelling, Adaptation and Personalization (**UMAP**), Dublin, Ireland, June 19-July 3, 2015

19. P. Karampiperis, A. Koukourikos, G. Panagopoulos. *"From Computational Creativity Metrics to the Principal Components of Human Creativity"*, in Proc. of Knowledge, Information and Creativity Support Systems (**KICSS**), Limassol, Cyprus, November 6-8, 2014

20. A. Koukourikos, P. Karampiperis, G. Panagopoulos. *"Creative Stories: A Storytelling Game fostering Creativity"*, in Proc. of Cognition and Exploratory Learning in Digital Age (**CELDA**), Porto, Portugal, October 25-27, 2014

Scientific Services

- Reviewer: Transactions of Machine Learning Research (TMLR), Knowledge Discovery and Data Mining (KDD), International Conference on Machine Learning (ICML), International Conference on Learning Representations (ICLR), The Web Conference (WWW), International Conference on Artificial Neural Networks (ICANN), IEEE Advances in Social Networks Analysis and Mining, IEEE Transactions of Intelligent Transportation Systems, IEEE Transactions on Knowledge and Data Engineering, Springer Data Mining and Knowledge Discovery, Springer Artificial Intelligence Review, Springer Scientometrics, Springer Applied Network Science, Elsevier Informetrics
- Tutor in Mediterranean Machine Learning Summer School, 2023
- Co-organizing International Conference on BioInformatics and BioEngineering, 2017

Awards & Scholarships

- CIKM Best Resource Paper, 2021
- Registration on Machine Learning Summer School, 2020
- KDD Registration Award, 2020
- ICWSM Best paper honorable mention, 2020
- Best Ms Thesis Award, University of Houston, 2018
- PETRA Travel Award, 2017
- Presidential Fellowship Award, University of Houston, 2016
- PhD Fellowship, University of Houston, 2016
- Doctoral Scholarship, NCSR Demokritos, 2016
- 1st place in Open Public Data Hackathon, Greek Ministry of Administrative Reform, 2014
- 1st place in Green Hackathon, Agro-Know, 2013

Research Projects

- COVIF (2020), ASIP (2019), ESIGMA (2019), SmartLaw (2018) ,Toyota Safety (2017), SemaGrow (2016), C2Learn (2014-2015).

Technical Skills

- Coding: Python (advanced), Java (intermediate), Scala, C++ (basic)
- Machine Learning: PyTorch, PyG (advanced), JAX, Tensorflow (intermediate)
- Statistics: R (advanced), Matlab (intermediate), Julia (basic)
- Databases: MySQL, PostgreSQL (advanced), AWS ETL (intermediate), Spark, MongoDB, Hadoop (basic)
- Optimization: XPRESS (intermediate), CVXPY (basic)

References

- Michalis Vazirgiannis (ex-supervisor): mvazirg@lix.polytechnique.fr
- Fragkiskos Malliaros (ex-cosupervisor): fragkiskos.me@gmail.com
- Georgios Paschos (ex-director): paschosg@amazon.com
- Nikolaos Liakopoulos (ex-manager): nliako@amazon.com
- Ioannis Pavlidis (ex-supervisor): ipavlidi@central.uh.edu
- Pythagoras Karampiperis (ex-manager): pythk@ieee.com
- Iraklis Varlamis (ex-supervisor): varlamis@hua.gr