

NIKOLAOS IOANNIS BOUNTOS



EDUCATION

PhD candidate in Computer Science Sept 2025 (Expected)

Orion Lab, National Technical University of Athens & National Observatory of Athens

Degree awarded by Harokopio University of Athens

Thesis: *Multimodal Representation Learning for Earth Observation*

MSc in Data Engineering and Analytics Feb 2020

Technical University of Munich

Thesis: *Subpixel Classification of Anthropogenic Features Using Deep Learning on Sentinel-2 Data*

BSc in Computer Science Sept 2016

Aristotle University of Thessaloniki

Thesis: *Study of Causal Inference Algorithms*

RESEARCH & WORK EXPERIENCE

AI Researcher / PhD Candidate Jan 2021 – Present

Orion Lab, National Technical University of Athens & National Observatory of Athens

Supervisor: *Ioannis Papoutsis*

Led research on multimodal representation learning for Earth Observation, resulting in multiple publications in top ML conferences and Earth Observation journals.

Contributed to EU projects including [DeepCube](#) and [ThinkingEarth](#).

Supervised master's and PhD students.

Research Intern Apr 2023 – Nov 2023

[Mila – Quebec AI Institute](#)

Supervisor: *David Rolnick*

Investigated methods for the creation and evaluation of sensor-agnostic, flexible foundation models for Earth Observation.

Visiting Researcher & Beyond Fellow Sept 2022 – Dec 2022

[AI4EO Future Lab, Technical University of Munich](#)

Supervisor: *Xiaoxiang Zhu*

Studied modality domination in multimodal representation learning in Earth Observation.

Artificial Intelligence Engineer Dec 2019 – Apr 2020

[Motius](#)

Developed deep learning methods for turbine fault detection using 3D point cloud data.

Master's Thesis on Computer Vision for Earth Observation Apr 2019 – Sept 2019

[Esri Deutschland](#)

Supervisor: *Thomas Huckle*

Explored deep learning methods for subpixel land cover classification using UAV and Sentinel-2 data.

Working Student, Data Analytics
[KPIT](#)

July 2018 – Feb 2019

Performed log analysis and extracted actionable user behavior insights.

Working Student, Data Scientist
[Trillr.com](#)

Oct 2017 – Jan 2018

Designed and maintained a structured database for product and user traffic data.
Analyzed user behavior to generate actionable business insights communicated to stakeholders.
Automated business insights generation for improved decision making.

Web Developer
[Newte](#)

Dec 2016 – Apr 2017

Designed and developed custom websites tailored to client requirements.
Enhanced and extended features of existing websites.

AWARDS/SCHOLARSHIPS

- **Best Paper Award** at the **ICCV 2023 AI + HADR** workshop for our paper **TeleViT: Teleconnection-driven Transformers Improve Subseasonal to Seasonal Wildfire Forecasting**.
- **International Research Center on Artificial Intelligence** under the auspices of **UNESCO Global Top 100 list 2022-23** for the project: **Pluto - A global volcanic unrest early warning system**, rated as **Excellent**.
- **Beyond Fellow Scholarship** of the AI4EO Future Lab of the Technical University of Munich
- **European Union Agency for the Space Program - Cassini Challenge**: winner of the idea track

SELECTED TALKS

- [Foundation Models for Earth Observation, Living Planet 2025, Vienna, Austria](#)
- [A Practical Session on Deep Learning Advances for Monitoring and forecasting Natural Hazards, IGARSS 2024, Athens, Greece](#)
- [Deep Learning for monitoring and forecasting natural hazards with earth observation data, IGARSS 2023, Pasadena, California](#)

OTHER ACTIVITIES

- Reviewer for NeurIPS, IEEE Transaction on Geoscience and Remote Sensing
- Program Committee for AAI-26, and the ICANN-23.

PUBLICATIONS

- [Kondylatos Spyros*](#), [Nikolaos Ioannis Bountos*](#), Michail Dimitrios, Zhu Xiao Xiang, Camps-Valls Gustau, Papoutsis Ioannis. "On the Generalization of Representation Uncertainty in Earth Observation." Proceedings of the IEEE/CVF International Conference on Computer Vision (ICCV), 2025.
- [Nikolaos Ioannis Bountos*](#), [Maria Sdraka*](#), Angelos Zavras, Ilektra Karasante, Andreas Karavias, Themistocles Herekakis, Angeliki Thanasou, Dimitrios Michail, Ioannis Papoutsis. "Kuro Siwo: 33 billion m^2 under the water. A global multi-temporal satellite dataset for rapid flood mapping." Advances in Neural Information Processing Systems 37 (2025): 38105-38121.

- **Nikolaos Ioannis Bountos**, Arthur Ouaknine, Ioannis Papoutsis, and David Rolnick. "Fomo: Multi-modal, multi-scale and multi-task remote sensing foundation models for forest monitoring." Proceedings of the AAAI Conference on Artificial Intelligence. Vol. 39. No. 27. 2025.
- Wang, Yi, Zhitong Xiong, Chenying Liu, Adam J. Stewart, Thomas Dujardin, **Nikolaos Ioannis Bountos**, Angelos Zavras, Franziska Gerken, Ioannis Papoutsis, Laura Leal-Taix'e and Xiao Xiang Zhu. "Towards a Unified Copernicus Foundation Model for Earth Vision." Proceedings of the IEEE/CVF International Conference on Computer Vision (ICCV), 2025
- Spyros Kondylatos, **Nikolaos Ioannis Bountos**, Ioannis Prapas, Angelos Zavras, Gustau Camps-Valls, Ioannis Papoutsis. "Probabilistic Machine Learning for Noisy Labels in Earth Observation." arXiv preprint arXiv:2504.03478 (2025).
- Papadopoulos, Nikolas, **Nikolaos Ioannis Bountos**, Maria Sdraka, Andreas Karavias and Ioannis Papoutsis. "Hephaestus Minicubes: A Global, Multi-Modal Dataset for Volcanic Unrest Monitoring." (2025).
- Michail, D., Davalas, C., Panagiotou, L. I., Prapas, I., Kondylatos, S., **Bountos, N. I.**, & Papoutsis, I. (2025). FireCastNet: Earth-as-a-Graph for Seasonal Fire Prediction. arXiv preprint arXiv:2502.01550.
- Michail, D., Panagiotou, L. I., Davalas, C., Prapas, I., Kondylatos, S., **Bountos, N. I.**, & Papoutsis, I. (2024). Seasonal fire prediction using spatio-temporal deep neural networks. arXiv preprint arXiv:2404.06437.
- Papoutsis, Ioannis, **Bountos Nikolaos Ioannis**, Zavras Angelos, Michail Dimitrios, Tryfonopoulos Christos. "Benchmarking and scaling of deep learning models for land cover image classification." ISPRS Journal of Photogrammetry and Remote Sensing 195 (2023): 250-268.
- Prapas, Ioannis, **Nikolaos Ioannis Bountos**, Spyros Kondylatos, Dimitrios Michail, Gustau Camps-Valls and Ioannis Papoutsis. Prapas, Ioannis, et al. "Televit: Teleconnection-driven transformers improve subseasonal to seasonal wildfire forecasting." Proceedings of the IEEE/CVF International Conference on Computer Vision (ICCV) Workshops. 2023.
- **Nikolaos Ioannis Bountos**, Dimitrios Michail, and Ioannis Papoutsis. "Learning from Synthetic InSAR with Vision Transformers: The case of volcanic unrest detection." IEEE Transactions on Geoscience and Remote Sensing (2022).
- **Bountos, Nikolaos Ioannis**, Papoutsis, I., Michail, D., Karavias, A., Elias, P., & Parcharidis, I. (2022). "Hephaestus: A large scale multitask dataset towards InSAR understanding." Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR) Workshops. 2022.
- **Nikolaos Ioannis Bountos**, Ioannis Papoutsis, Dimitrios Michail, Nantheera Anantrasirichai. "Self-supervised contrastive learning for volcanic unrest detection." IEEE Geoscience and Remote Sensing Letters 19 (2021): 1-5.

*First two authors contributed equally.