One (1) Post Doc position in the project

"PASIPHAE"

Overcoming the Dominant Foreground of Inflationary B-modes: Tomography of Galactic Magnetic Dust via Measurements of Starlight Polarization

(Call: ERC-2017-COG, GA 771282)
Funded under H2020-EU.1.1. - EXCELLENT SCIENCE - European Research Council (ERC)

European Commission | Horizon 2020 European Union funding for Research & Innovation

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Heraklion, 19.06.2023

The Institute of Astrophysics (IA) of the Foundation for Research and Technology Hellas (FORTH), in the framework of the project PASIPHAE, (Call: ERC-2017-COG, Proposal number: 771282) funded under H2020-EU.1.1. - EXCELLENT SCIENCE - European Research Council (ERC) is seeking to recruit one (1) Postdoc position.

Title: Deep learning methods for analysis of imbalanced astrophysical observations.

Job Description

Machine learning has emerged as a powerful tool that is revolutionizing the way we analyze and interpret astronomical data. With the advent of large-scale surveys and high-precision instruments, the volume of data being generated in astrophysics has grown exponentially. Manual analysis of these massive datasets is impractical, if not impossible. Machine learning provides the ability to automate the processing and analysis of this data, uncovering patterns and insights that would be difficult to achieve otherwise.

PASIPHAE aims to map the polarization of millions of stars away from the Galactic plane, an endeavor that inherently involves dealing with imbalanced data. The majority of data collected will represent common

stars, while a minority will correspond to intrinsically polarized sources. Proper classification of these imbalanced data is vital.

Within PASIPHAE, we seek one post-doctoral researcher that will explore the application of machine learning to classify imbalanced data, and communicate machine learning skills to students and postdocs of the group. By identifying and highlighting the rare patterns within the massive data generated by the project, the developed algorithms will enable the construction of a tomographic map of the Galactic magnetic field.

Required qualifications

The successful candidate needs to have a Ph.D. degree in Computer Science or related fields and good knowledge of state-of-the-art machine learning models and their application in scientific data analysis.
The aforementioned required qualifications will be judged as follows:

- Scientific publications in high-impact international journals (20%)
- Experience with interdisciplinary research and the analysis of observations from scientific instruments (20%)
- Strong mathematical background and experience in developing novel machine-learning algorithms focusing on imbalanced data analysis (20%)
- Excellent programming skills including demonstrated experience with deep machine learning frameworks (TensorFlow, PyTorch) (20%)
- Demonstrated experience in teaching (10%)
- Excellent knowledge of English (Proficiency level) (10%)

Location: IA - FORTH, Heraklion Crete GREECE

Start Date: August 1, 2023

Project Duration: 10 months.

Monthly salary: 2900 euros (gross)

Application Submission

Interested candidates who meet the aforementioned requirements are kindly asked to submit their applications, no later than **July 4th, 2023, 23:59 local Greece** time to the address (info@ia.forth.gr), with cc to Prof. Konstantinos Tassis (tassis@ia.forth.gr).

In order to be considered, the application must include:

- Application Form (please download file from the job announcement webpage https://www.ia.forth.gr/employment-opportunities)
- Brief CV
- Scanned copies of academic titles

Any application received after the deadline will not be considered for the selection

Contact

For information and questions regarding the application and selection procedure, candidates are asked to contact the secretariat (info@ia.forth.gr), tel. +30 2810-394200.

For information and questions about the advertised position and the research activity of the group or the institute, please contact Prof. Konstantinos Tassis (tassis@ia.forth.gr), tel. (+30) 2810 394219.

Selection Announcement

The result of the selection will be announced on the website of IA - FORTH.

Candidates have the right to appeal the selection decision, by addressing their written objection to the IA secretariat within five (5) days since the results announcement on the web. They also have the right to access (a) the files of the candidates as well as (b) the table of candidates' scores (ranking of candidates results). All the above information related to the selection procedure will be available at the secretariat of IA - FORTH in line with the Hellenic Data Protection Authority.

GDPR

FORTH is compliant with all legal procedures for the processing of personal data as defined by the Regulation EU/2016/679 on the protection of natural persons with regard to the processing of personal data.

FORTH processes the personal data and relevant supporting documents that you have submitted to us. Processing of that data is carried out exclusively for the needs and purposes of this specific call. Such data shall not be transmitted to or communicated to any third party unless required by law.

FORTH retains the above data up to the announcement of the final results of the call, unless further process and reservation is required by law or for purposes of exercise, enforcement, prosecution of certain one's legitimate legal rights' as defined in the Regulation EU/2016/679 and/or in national law.

We inform you that under the Regulation EU/2016/679 you have the rights to be informed about your personal data, access to, rectification and erasure, restrictions of process and objection to as provided by applicable regulation and national laws.

We acknowledge also to you, that you have the right to file a complaint to the national Data Protection Authority. For any further information regarding exercise of your personal data protection rights, you may contact the Data Protection Officer at FORTH at dpo@admin.forth.gr.

You have the right to withdraw your application and consent for the processing of your personal data at any time. We inform you that, in this case, FORTH shall destroy such documents and/or supporting documents submitted and shall delete the related personal data.