



AI for Signal and Image Processing

Institut Pascal, June 27 - July 08, 2022

– CALL FOR PARTICIPANTS –

The Institut Pascal (IPa) program on *Artificial Intelligence (AI) for Signal and Image Processing* will take place in Paris-Saclay University, France. The meeting will be located at the Institut Pascal, 1 hour away from downtown Paris by public transportation. This program aims to **gather researchers from the fields of signal and image processing and machine learning** in order to both bridge the gap and strengthen collaborations between both communities. In addition, the focus will be centered around medical image analysis, in which machine learning techniques have become increasingly popular.

Recently, and over the last few years, there has been a tremendous interest in AI and especially in Deep Learning for massive and heterogeneous data analysis that extends to many different applications. Learning and extracting information from multivariate and often heterogeneous data has now become a major challenge both due to the sheer volume of data and its complexity. Although deep learning approaches often bring impressive results due to the convolutional neural net architecture, the reports in the literature are often empirical, and thus do not respond to important and structural questions related to: The theoretical understanding of deep learning, learning the structure of deep networks, the empirical definition of the regimes where deep learning solutions outperform shallow or classical machine learning, quantification of uncertainties of the learning process, how to move from supervised to self- or unsupervised learning, and how to reduce the computing time, to name a few.

The 2-week program aims to provide an opportunity for researchers and especially young researchers (*e.g.*, PhD students, postdoctoral fellows) to learn the underlying theory and concepts discussed in the program, to share their knowledge, and to develop new collaborations. The program will be dedicated to:

1. **Signal processing theory and methods;**
2. The **empirical evaluation of algorithms on open data sets, *i.e.*, benchmarks;**
3. **Data challenges and coding sprints** for developing open-source software;
4. **Journal clubs** aiming to survey the literature and make recommendations on specific problems.

A non-exhaustive list of scientific research topics was previously sketched out during the IPa program “teasing day”, held in September 2021: see here. As the IPa aims to explore pioneering ideas and finally establish new collaborations, the program will facilitate brainstorming sessions that lead to innovative advancements. Hence, adequate amounts of time will be dedicated to breakout sessions of small to medium-size groups of researchers.

– APPLICATION AND FEES –

The number of applications is limited to 30. Participants will be selected according to their CV (2 pages maximum), a motivation letter and a recommendation letter (for PhD students and post-docs only). Submission of these documents can be uploaded at <https://cmt3.research.microsoft.com/AI4SIP2022/Submission/Index> (register to CMT first). Applicants should provide a clear presentation of (*i*) their scientific background and achievements; (*ii*) their computational skills and proficiency; (*iii*) their research projects and interests; (*iv*) their expectations for this program including the nature of the collaborations (*cf.* the 4 above mentioned items) they target.

Selected participants will need to register for the AI program and be present on-site for the entire two weeks. Registration is free for academics. The registration fee for industrial participants is 2000 euros. Registration will cover access to the meeting, all meals and accommodation.

– IMPORTANT DATES –

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| ▪ Jan. 13, 2022 | Application system opens | ▪ May. 02, 2022 | Registration opens |
| ▪ Apr. 8, 2022 | Deadline for application | ▪ May 27, 2022 | Registration deadline |
| ▪ Apr. 29, 2022 | Notification of accepted applications | ▪ June 27-July 08, 2022 | AI program |

– SCIENTIFIC AND ORGANIZING COMMITTEES –

SCIENTIFIC COMMITTEE: E. Chouzenoux (Inria Paris-Saclay), A. Desolneux (ENS Paris-Saclay), A. Gramfort (Inria Paris-Saclay), A. Kazeykina (Paris-Saclay University), M. Kowlaski (Paris-Saclay University).

ORGANIZATING COMMITTEE: P. Ciuciu (CEA), F. Pascal (CentraleSupélec), C. Soussen (CentraleSupélec), B. Thirion (Inria Paris-Saclay).