

Meta-learning in Deep Learning: New Trends and Directions

Thematic Session within VipIMAGE 2017

VI ECCOMAS Thematic Conference on Computational Vision and Medical Image Processing

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Description

Machine learning techniques have been widely used to solve a number of problems in the literature, thus broadening their usage to problems that have never been considered before. However, most techniques have parameters and hyperparameters to be learned, which are crucial for their good performance. Another problem concerns their architecture, since each problem may require a different one. Meta-learning arises to allow us to select, from a set of techniques, the best one to solve some specific problem. In this context, one may face two distinct problems: (i) to first fine-tune a given model, and then (ii) to select the most suitable one from a bag-of-models. Interestingly, the aforementioned problems can be modeled as an optimization task, being nicely addressed by means of meta-heuristic techniques, which are mainly based on evolutionary behavior and social and collective intelligence. Another viewpoint concerns the number of functions to be optimized, which may range from a single one to hundreds. This thematic section aims at bringing together new ideas to solve the aforementioned problems, with special attention to deep learning techniques, which are often customized for some specific problem, and may not work well for another one.

Topics of interest include (but are not restricted to):

- Meta-heuristics
- Swarm intelligence
- Meta-learning
- Deep learning
- Machine learning
- Single-, Multi- and Many-objective optimization in machine learning
- Feature selection
- Model selection
- Parameter and hyperparameter fine-tuning

Publications

The **proceedings book** will be **published by Springer** under the book series **"Lecture Notes in Computational Vision and Biomechanics"** and **indexed by Elsevier Scopus**.

A special issue of the Taylor & Francis international journal "[Computer Methods in Biomechanics and Biomedical Engineering: Imaging & Visualization](#)", indexed in ISI Thomson Reuters, Elsevier Scopus and dblp, **will be published**. All authors of works presented in VipIMAGE 2017 will be invited to submit an extended version to the special issue.

Important dates

- **Submission of extended abstracts: April 21, 2017 (FINAL deadline)**
- Authors Notification: May 10, 2017
- Final Papers (not compulsive): June 15, 2017

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