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OL2A'2021

BOOK OF ABSTRACTS

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Welcome

Welcome to OL2A 2021 - International Conference on Optimization, Learning Algorithms and Applications.

OL2A offers a forum for the research community on optimization and learning to get together and share the latest developments and techniques as well as develop new paths and collaborations.

OL2A provides a wide scope of presentations, covering many areas of optimization and learning and state of the art applications to multi-objective optimization, optimization for machine learning, machine learning for optimization, optimization and learning under uncertainty and 4th industrial revolution.

It is with great pleasure that the Organizing Committee welcomes you all to OL2A 2021!

The OL2A'2021 organization committee,

Ana Isabel Pereira, Florbela Fernandes, João Paulo Coelho, João Paulo Teixeira, Maria Pacheco, Paulo Alves and Rui Lopes

Deep Learning Recognition of a Large Number of Pollen Grain Types

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Pollen in honey reflects its botanical origin and melissopalynology is used to identify origin, type and quantities of pollen grains of the botanical species visited by bees. Automatic pollen counting and classification can alleviate the problems of manual categorisation such as subjectivity and time constraints. Despite the efforts made during the last decades, the manual classification process is still predominant. One of the reasons for that is the small number of types usually used in previous studies. In this paper, we present a large study to automatically identify pollen grains using nine state-of-the-art CNN techniques applied to the recently published POLEN73S image dataset. We observe that existing published approaches used original images without study the possible biased recognition due to pollen's background colour or using preprocessing techniques. Our proposal manages to classify up to 97.4% of the samples from the dataset with 73 different types of pollen. This result, which surpasses previous attempts in number and difficulty of pollen types under consideration, is an important step towards fully automatic pollen recognition, even with a large number of pollen grain types.

Evaluation of Soft Skills Through Educational Testbed 4.0

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Industry 4.0 is promoting changes in the labour market through the need for digitalization. As a result, new skills, new job profiles and training programs need to follow this transformation, as these technological trends are affecting the work profiles and skills required by the workforce for Industry 4.0. To develop the workforce of the future, specifically soft skills for industry 4.0, it is necessary to have innovative teaching methodologies for workforce training, which encourages the development of specific soft skills for industry 4.0 of the workforce. With this in mind, this work aims to evaluate the development of soft skills through the Educational Testbed 4.0 teaching methodology in bachelor students at a Brazilian university. The proposed model was illustrated that the development of teamwork, communication and creativity were developed, improved and enhanced from the training program, provided from course inserted in the university program. In addition to checking important issues for the students who attended the course, including teamwork, contact with the labour market, real problem solving, among other issues encoded using Software QSR Nvivo® version 10, 90% to 95% of the respondents agreed that teamwork and communication were the soft skills most developed and used during the course or training program.
