



Book of Abstracts

III International Conference on Optimization, Learning Algorithms and Applications

Azores, Ponta Delgada, Portugal
September, 27 - 29, 2023

ol2a.ipb.pt

Editors

Ana I. Pereira, Polytechnic Institute of Bragança, Portugal.

Armando Mendes, Azores University, Portugal.

Florbela P. Fernandes, Polytechnic Institute of Bragança, Portugal.

João P. Coelho, Polytechnic Institute of Bragança, Portugal.

João P. Teixeira, Polytechnic Institute of Bragança, Portugal.

José Cascalho, Azores University, Portugal.

José Lima, Polytechnic Institute of Bragança, Portugal.

Maria F. Pacheco, Polytechnic Institute of Bragança, Portugal.

Rui Pedro Lopes, Polytechnic Institute of Bragança, Portugal.

Instituto Politécnico de Bragança

Campus de Santa Apolónia

5300-253 Bragança - Portugal

ISBN: 978-972-745-326-9

Book cover: *Divaga Design*

An Evaluation of Image Preprocessing in Skin Lesions Detection

Giuliana M. Silva, André E. Lazzaletti and Fernando C. Monteiro

Research Centre in Digitalization and Intelligent Robotics, Associate Laboratory for Sustainability and Technology, Instituto Politécnico de Bragança, Universidade Tecnológica Federal do Paraná (UTFPR)

This study aims to evaluate the impact of image preprocessing techniques on the performance of Convolutional Neural Network (CNNs) in the task of skin lesion classification. The study is made on the ISIC 2017 dataset, a widely used resource in skin cancer diagnosis research. Thirteen popular CNN models were trained using transfer learning. An ensemble strategy was also employed to generate a final diagnosis based on the classifications of different models. The results indicate that image preprocessing can significantly enhance the performance of CNN models in skin lesion classification tasks. Our best model obtained a balanced accuracy of 0.7879.

Keywords: Skin Lesion Classification · Convolutional Neural Network · Deep Learning · Image Preprocessing