

II Workshop in BioMathematics

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COVID-19's pandemic: a new way of thinking through linear combinations of proportions

Abstract

COVID-19 is a severe acute respiratory syndrome caused by the SARS-CoV-2 virus. In this work, using appropriate linear combination of proportions, we explore the behavior of the trajectory of the pandemic curve in Portugal considering the time series of COVID-19 dataset in Portugal. Trajectories of different linear relations of proportions and pairs of two proportions are displayed in order to visually depict and compare their evolution's.

The main purpose of this work is to take adequate linear combination of proportions for the comparison of the more "comfortable situation", in the sense of not overloading the National Health System, with the more "dramatic" situation which can be experienced by COVID-19 infected persons.

Jorge Cabral

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A novel approach of pulmonary rehabilitation effectiveness in COPD

Abstract

In this talk, we approach Chronic Obstructive Pulmonary Disease (COPD) multidimensional pulmonary rehabilitation outcomes from an optimal control theory point of view. More precisely, we present a multiobjective optimization problem with three objectives obtained by multiple linear regression of data collected from three different studies at the Respiratory Research and Rehabilitation Laboratory, at School of Health Sciences of the University of Aveiro. We use the Nondominated Sorting Genetic Algorithm-II (NSGA-II) to obtain a Pareto front and statistically analyse the distance from the predicted individuals' objectives to it. We also present an interactive dashboard built with Shiny's R package that facilitates the prediction of the outcomes and distances

Online session: <https://videoconf-colibri.zoom.us/j/89067033498>

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