

COVID-19 therapy optimization by AI-driven biomechanical simulations

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Prognostic methods to predict the evolution of the COVID-19 disease can be decisive to address the most suitable therapeutic approach. We propose an AI algorithm to make predictions of the patient respiratory condition and functional response, by merging information from CT scans, blood gas analysis and biomechanical simulations of air ventilation in the lung tissues performed by the software developed at MedLea Srls. Our work is based on a COVID-19 dataset of about 60 patients and on publicly available datasets. A deep segmentation network is used to segment COVID-19 lesions on the CT that are subsequently correlated with clinical parameters. A preliminary study on diagnostic accuracy and perspectives on prognostic capabilities are presented.

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