Summarization Application Testing

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Model: Trained on ten documents (not including itself)

Keywords: data, COVID_19 (Top two words occurring in the document)

Control: Abstract from the paper

ABSTRACT COVID-19 outbreak has put the whole world in an unprecedented difficult situation bringing life around the world to a frightening halt and claiming thousands of lives. Due to COVID-19's spread in 212 countries and territories and increasing numbers of infected cases and death tolls mounting to 5,212,172 and 334,915 (as of May 22 2020), it remains a real threat to the public health system. This paper renders a response to combat the virus through Artificial Intelligence (AI). Some Deep Learning (DL) methods have been illustrated to reach this goal, including Generative Adversarial Networks (GANs), Extreme Learning Machine (ELM), and Long /Short Term Memory (LSTM). It delineates an integrated bioinformatics approach in which different aspects of information from a continuum of structured and unstructured data sources are put together to form the user-friendly platforms for physicians and researchers. The main advantage of these AI-based platforms is to accelerate the process of diagnosis and treatment of the COVID-19 disease. The most recent related publications and medical reports were investigated with the purpose of choosing inputs and targets of the network that could facilitate reaching a reliable Artificial Neural Network-based tool for challenges associated with COVID-19. Furthermore, there are some specific inputs for each platform, including various forms of the data, such as clinical data and medical imaging which can improve the performance of the introduced approaches toward the best responses in practical applications.

Occurrences of Keywords: 7

Summary using only weighting system:

INDEX TERMS Artificial intelligence, big data, bioinformatics, biomedical informatics, COVID-19, deeplearning, diagnosis, machine learning, treatment. I. AppropriatingAI techniques to deal with COVID-19 related issues can fillthe void between AI-based methods and medical approachesand treatments. In this paper, our team relies on the findings of themost recent research focusing on COVID-19 and its variouschallenges to generalize and suggest a variety of strategie srelevant but notlimited to high-risk groups, epidemiol-ogy, radiology and etc. Objectives of data understandinginclude understanding data attributes and identifying maincharacteristics such as data volume and the total numberof var iables to summarize the data. Before processing andanalysis comes data preparation that is the process throughwhich raw data are refined and converted. Humans' contribution at this stage is important becausetheir knowledge and potent ials are not available to an MLsolution that unlike humans is able to deal with huge data setsfar beyond the extent that humans could handle or observein a simultaneous manner. DL methods, as Fig. As a subset of machinelearning, DL consists of numerous layers of algorithms thatprovide a different interpretation of the data it feeds on. . categorized into 3 parts, including high-risk groups, outbreakand control, recognizing and diagnosis. . The input layer as t he initiallayer is related to the database and is designed for databaseaccess. Taking advan-tage of a good number of microprocessors with databasesoftware database machines can send huge packets of datato the mainframe. If physician s confirm thedecisions made by this layer, the recommended techniques inthe third layer take the required images. The conventional optical microscope hascome to be the dominant tool in pathological examinations. The fourth layer is d edicated to the optimization andimprovement of the images. for network structure, and the classical ResNet was used toextract features [24]. DL technologies, such as a convolutionalneural network (CNN), are supposed to be the right optionfor achieving these goals. . III. Since reaching thebest possible results is the main objective, we will try todemonstrate ways through which ANN-based methods could. As [29]suggested it is necessary to keep patients involved COVID-19registry that highlights clinical variables and cardiovascularcomplications because it facilitates the identification of thepattern of cardiovascular complications, furthers developinga risk model for cardiac complications, a nd assists with iden-tification and/or prediction of the response to different typesof treatment modalities. . data that [29] presents to predict the ways that cardiovascularsystem is affected by the Coronavirus. Therefore, the sug-g ested model is capable of reducing the risk of possiblecardiovascular complications. Hence, considering their properties and multiple advantages,ELMs are recommended for such problems. Another complication that COVID-19 causes in th e elderlyis heart failure, which requires heart failure specialists stayon guard and design a structured approach to these type ofpatients and include them in developing algorithms for thecare of these patients in early stages until the time whendefinite universal COVID-19 examinations or clinical trialsof antivirals are in place, and deeper understanding of finalstages of the disease is realized [35]. Ref-erence [35] and biomarkers, especially in high-risk elde rlypatients with underlying structural cardiac disease should beused with care and caution. As such, defining and managingadvanced heart failure in the phase of hyper inflammation areimportant issues for heart specialists [35]. Fig. E LM ANN can useprevious examples applied to the model to predict desiredoutputs. This means that training the supervised model hap-pens through the

(Only a sample of summary, total summary saved as aiCovid_weightOnlySummary.txt)

Occurrences of keywords in total summary: 113

Summary using weighting and word distance:

Artificial Intelligence and COVID-19: DeepLearning Approaches for Diagnosisand Treatment:
Another complication that COVID-19 causes in the elderlyis heart failure, which requires heart failure specialists stayon guard and design a structured approach to these type ofpatients and include them in developing algorithms for thecare of these patients in early stages until the time whendefinite universal COVID-19 examinations or clinical trialsof antivirals are in place, and deeper understanding of finalstages of the disease is realized [35]. Despite much praise that such data has receivedbecause of its role in improving efficiency, productivity andprocesses in different sectors, it has been criticized for itssmall number of users who collect, store, manage the data andhave access to them [76]. Collecting, analyzing and leveragingthe data such as consumer, patient, physical, and clinical dataends in big data. Different steps in the application of AI-based methodsemployed to overcome COVID-19 challenges are prese ntedin the flowchart shown in Fig.1. The first step is the prepara-tion of the data which are necessary for data mining duringdata understanding, data preparation and big data. In other words, it isa process in which data are reformat ted, corrected and com-bined to enriched data. Moreover, Deep Learning (DL)methods could be employed in cases where enormous orcomplex data processing challenge ML or traditional meansof data processing. Before processing andanalysi s comes data preparation that is the process throughwhich raw data are refined and converted. Objectives of data understandinginclude understanding data attributes and identifying maincharacteristics such as data volume and the total numberof variables to summarize the data. makes it possible to tell when wrong things are happening,or actions are to be taken regarding COVID-19 because itmonitors and collects data coming from social media, news-feeds, and airlin er ticketing systems [77]. It is at this stage that human intervention,as a part of machine learning methods, takes place and expertsinvestigate and analyze the data to extract the data with fineststructures, patterns and features. R eference [64] has studied clinical and biological data offive COVID-19 patients. Advanced machine learningalgorithms can integrate and analyze large-scale data relatedto COVID-19 patients to facilitate a deeper understandingof viral spread pattern, improve the speed and accuracy ofdiagnosis, develop fresh, effective therapeutic approaches,and even identify individuals who, depending on their geneticand physiological features, are most susceptible to the dis-eas e [75].

Occurrences of Keywords: 30