



3.3 Research Publications and Awards

3.3.1. Number of research papers published per teacher in the Journals notified on UGC care list during the last five years

3.3.1.1. Number of research papers in the Journals notified on UGC CARE year wise during the last five years

2018-19

REVIEW PAPER

MANAGING DATA PRIVACY IN SMART HEALTH AND SMART VEHICLE

By

KAHKASHAN SIDDAVATAM *

SONAL BANKAR **

SULBHA YADAV ***

*-*** Assistant Professor, Department of Computer Engineering, Lokmanya Tilak College of Engineering, Navi Mumbai, Maharashtra, India.

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ABSTRACT

The services provided by multiple IoT devices require certain amount of personal information to be gathered, processed and exchanged. The personal information data can be considered as secondary data and this data generated can be sensitive in nature. Thus data privacy needs to be ensured. Different IoT domains have different methods to keep privacy of data. A security framework encompassing these domains must be created for data protection. This paper focused on some models suggested for privacy of data of certain IoT applications, such as Smart Health, Smart Vehicles, etc. Here, the authors have analysed diverse privacy protection approaches adopted based upon dissimilar data in different IoT application domains.

Keywords: IoT Data Privacy, Smart Health, Smart Vehicles.

INTRODUCTION

Internet of Things is an emerging technology. It is now engulfing all sorts of devices by connecting them over the internet. This makes the security of these devices questionable as the devices may be connected to any network locally. As more and more IoT devices come in the market, there is an integrated network of these IoT devices. A large amount of data is generated by these interconnected devices. IoT have vast data repositories for managing this data. Many such devices connected via cyberspace have a threat of security breach, which may result in the datum to come in the wrong hands. It may also be used as botnets and used for spying on the owners of the device. The privacy of data gets hampered as security of the IoT is still in its nascent stages. A strong security model needs to be implemented for ensuring privacy.

Data protection has not been keenly looked into. If the data generated is gone into the wrong hands, it may lead to unlawful practices keeping the data anonymous should be the main focus to ensure data privacy. There are various security threats and attacks associated with IoT devices. This is because the data is sent through open

wireless channels which may be vulnerable. The IoT devices generally have sensors which are connected to networks. This data is collected, aggregated, and maintained by the service providers. The users of these IoT devices may not even know that their data is being collected. This data may be used for intelligent analytics. This data may be used to infer and correlate other hypothesis. Any medical data fallen into the hands of insurance company may infer the user's pre-existing medical condition and cause financial losses to the user. Lifestyle choices and location data are sensitive and if leaked may cause surveillance and may be used for other nefarious purposes.

In following sections of paper, the three most important applications of IoT including medicine, vehicles are discussed for various models for ensuring privacy. These models have been briefly compared and analysed in this paper.

1. Literature Survey

IoT is an increasingly growing ecosystem which is used to interact, communicate, collect, and exchange data. IoT creates an information society by integrating cyber,

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Lokmanya Tilak College of Engineering

Sector-4, Vikas Nagar, Koparkhairane, Navi Mumbai

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A study to Analyze impact of social media on society: WhatsApp in particular

Monika mangla^{a*}, Smita Ambarkar^b, Rakhi Akhare^c

^a *Ph.D, Thapar University, Faculty, LTCOE, Navi Mumbai, INDIA*

^b *Research Scholar, University of Mumbai, Faculty, LTCOE, Navi Mumbai, INDIA*

^c *Faculty, LTCOE, Navi Mumbai, INDIA*

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Abstract

With an enormous growth in the number of users for social media, it becomes important to understand its impact on the society. This paper is a small step in this direction by analyzing the impact of social media on the emotional health of its users. The paper in particular focuses on the impact of WhatsApp usage. In the study, authors have focused their research on 225 users. In this survey authors found that WhatsApp has a significant impact on the humans these days. It adversely impacts the youth and their education, behavior and routine life. This app is found to be highly addictive, which leaves a trace that becomes difficult to control. The impact of this application is so engrossing that users give up their real world interest and whole emotional quotient is restricted to the app. Their happiness or sadness depends on the reply that they receive from other users. They cannot control themselves from constantly chatting, replying and sharing of ideas. Hence, it is found during the study that some findings are alarming and needs to be controlled. It is noticed during the survey that WhatsApp has greatly influenced the life style of its users and therefore its usage should be monitored and controlled to avoid any adverse effect on emotional health of its users.

Index Terms: Human needs, emotional health, WhatsApp, Social media

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* Corresponding author.

E-mail address:



Lokmanya Tilak Jankalyan Shikshan Sanstha's

Lokmanya Tilak College of Engineering

Sector-4, Vikas Nagar, Koparkhairane, Navi Mumbai



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A fuzzy expert system for predicting the mortality of COVID'19

Monika MANGLA^{1*}, Nonita SHARMA², Poonam MITTAL³

¹CSED, Lokmanya Tilak College of Engineering, Navi Mumbai, India

²Dr. B.R. Ambedkar National Institute of Technology, Jalandhar, India

³JC Bose University of Science and Technology, YMCA, Faridabad, Haryana, India

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Abstract: The COVID-19 pandemic has had a widespread impact on health and economy across the globe. It is leading to a huge number of deaths per day. Few researchers have been attracted to analyzing the mortality rate of COVID-19 from various perspectives. During the research, it has become evident that these fatalities are not only caused by COVID-19, but they are also affected by some other factors. The authors of this paper aim to encompass three important types of factors viz. risk factors, clinical factors, and miscellaneous factors that influence the mortality of COVID-19. This manuscript presents a rule-based model under the Mamdani-based fuzzy expert system (FES) to analyze the mortality rate of the highly contagious COVID-19. The proposed model creates three FESs and thereafter generates the final FES which aggregates these three FESs. The FES for risk value considers 5 aggregate factors viz. immunity, temperature, ventilation, population density, and pollution. The second FES is to model the clinical facilities based on ICU count, quarantine centers, and tests performed. The third FES is created to model the miscellaneous factors. Finally, the concluding FES combines three base FESs to evaluate the mortality value. The results obtained by the suggested model are promising and hence advocate the efficacy of the proposed model.

Key words: COVID-19, clinical facilities, miscellaneous factors, Mamdani-fuzzy inference model, mortality

1. Introduction

During the past few months, COVID-19 has emerged as a highly contagious disease caused by a novel corona virus. Apart from higher risk of contamination, another concerning issue is unavailability of any medication or immunizations to date. Hence, the best possible way to avert its transmission is to be cautious about the spread of the COVID-19 infection. Nonetheless, there are numerous progressing clinical investigations assessing potential medicines. However, the infection has a low casualty rate, still it is declared to be a pandemic considering the massive scale of its spread. As of 29 May 2020, there are 359,791 deaths reported worldwide, while more than 2.3 million patients have recovered. Unfortunately, these numbers tend to underreport the actual number of deaths that this pandemic has caused. In numerous places, the reported figures exclude those who were not tested positive or was not admitted to hospital. This can be attributed to the fact that the reason of death takes quite a few days to get reported, thereby causing a lag in the data. Moreover, even the most accurate COVID-19 data will not tally individuals who died due to insinuating circumstances that may ordinarily have been dealt with, had medical clinics not been overpowered by a flood of patients requiring escalated care.

Epidemiological studies of the recovered cases and deaths have identified several risk factors arising from

*Correspondence: manglamona@gmail.com





Predicting mortality rate and associated risks in COVID-19 patients

Suneeta Satpathy¹ · Monika Mangla² · Nonita Sharma³ · Hardik Deshmukh² · Sachinandan Mohanty⁴

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Abstract The genesis of novel coronavirus (COVID-19) was from Wuhan city, China in December 2019, which was later declared as a global pandemic in view of its exponential rise and spread around the world. Resultantly, the scientific and medical research communities around the globe geared up to curb its spread. In this manuscript, authors claim competence of AI-mediated methods to predict mortality rate. Efficient prediction model enables healthcare professionals to be well prepared to handle this unpredictable situation. The prime focus of the study is to investigate efficient prediction model. In order to determine the most effective prediction model, authors perform comparative analysis of numerous models. The performance of various prediction models is compared using various error metrics viz. Root mean square error, mean

absolute error, mean square error and R^2 . During comparative analysis, Auto seasonal auto regressive integrated moving average model proves its competence over comparative models.

Keywords COVID-19 · Mortality rate · Predictive modelling · Risk assessment

1 Introduction

World health organization (WHO) has declared COVID-19 infectious disease to be a global pandemic in March 2020 in view of its exponential rise. Moreover, the spread of the virus crossed geographical boundaries spreading across the world. The spread is more concerning as the disease is closely related to respiratory tract infections. The additional symptoms of the disease include fever, cold and cough, breathlessness as well as diarrhea. In the worst cases, such type of disease can lead to death causing pneumonia [1, 2].

The maturation time period for the disease has been calculated to be 14 days but in some cases, it can be more than the estimated time [3]. The epidemic is also declared to be contagious as it can spread widely among the persons through respiratory droplets and contact with the persons suffering from COVID-19. To date no definite medicines or vaccines have been developed for such an epidemic except few preventive and awareness measures like social distancing, wearing masks, patient isolation, as well as travel constraints as guidelines, are made as compulsory rules to be adopted by everyone in the society [4]. But the success of these protocols being put forth in almost all countries depends on the people practicing the same

✉ Suneeta Satpathy
suneeta1912@gmail.com

Monika Mangla
manglamona@gmail.com

Nonita Sharma
nonita@nitj.ac.in

Hardik Deshmukh
hardikdeshmukh999@gmail.com

Sachinandan Mohanty
sachinandan09@gmail.com

¹ College of Engineering Bhubaneswar, Bhubaneswar, Odisha, India

² Lokmanya Tilak College of Engineering, Navi Mumbai, India

³ Dr. B.R. Ambedkar National Institute of Technology Jalandhar, Jalandhar, India

⁴ Department of Computer Sc & Engineering, ICFAI Tech, ICFAI Foundation for Higher Education, Hyderabad, India



A Heterogeneous Ensemble Forecasting Model for Disease Prediction

Nonita Sharma¹ · Jaiditya Dev² · Monika Mangla³ · Vaishali Mehta Wadhwa⁴ · Sachi Nandan Mohanty⁵ · Deepti Kakkar¹

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Abstract

The manuscript presents a bragging-based ensemble forecasting model for predicting the number of incidences of a disease based on past occurrences. The objectives of this research work are to enhance accuracy, reduce overfitting, and handle overdrift; the proposed model has shown promising results in terms of error metrics. The collated dataset of the diseases is collected from the official government site of Hong Kong from the year 2010 to 2019. The preprocessing is done using log transformation and z score transformation. The proposed ensemble model is applied, and its applicability to a specific disease dataset is presented. The proposed ensemble model is compared against the ensemble models, namely dynamic ensemble for time series, arbitrated dynamic ensemble, and random forest using different error metrics. The proposed model shows the reduced value of MAE (mean average error) by 27.18%, 3.07%, 11.58%, 13.46% for tuberculosis, dengue, food poisoning, and chickenpox, respectively. The comparison drawn between the proposed model and the existing models shows that the proposed ensemble model gives better accuracy in the case of all the four-disease datasets.

Keywords Bootstrapping · Bragging · Disease forecasting · Ensemble · Time series forecasting

Introduction

The rising prevalence of data acquisition applications leads to the collection of a vast amount of time-series data that enable forecasting for many medical applications. A multitude of end-use cases for time-series applications in the medical domain exists that aims to process thousands of time-series and millions of data points on an immense scale. Across the world, human populations are afflicted by

✉ Nonita Sharma
nonita@nitj.ac.in

Extended author information available on the last page of the article



Lokmanya Tilak Jankalyan Shikshan Sanstha's

Lokmanya Tilak College of Engineering

Sector-4, Vikas Nagar, Koparkhairane, Navi Mumbai

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