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[Data Driven Approach Towards Disruptive Technologies](#) pp 369–378 | [Cite as](#)

Probabilistic Estimation of COVID-19 Using Patient's Symptoms

[Sumit Banik](#) , [Sagar Banik](#), [Aniket Ghosh](#) & [Anupam Mukherjee](#)

Conference paper | [First Online: 07 April 2021](#)

313 Accesses | 1 Citations

Part of the [Studies in Autonomic, Data-driven and Industrial Computing](#) book series (SADIC)

Abstract

COVID-19 is a viral infectious disease that originated from Hubei Province being Wuhan as the central outbreak point. This paper proposes a model where the probability of getting infected will be derived from the person's symptoms. The prediction is very much required to understand the interdependencies of the category of symptoms responsible for the infection. For this work, we used various algorithms for the classification like logistic regression, naïve Bayes, random forest, linear support vector classifier, and decision tree. The performance metrics of various algorithms were compared, and the successful method was discussed. The approximate mean accuracy score using these algorithms was found to be 78%.

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Abstract

Document Sections

- I. Introduction
- II. Motivation
- III. Literature Review
- IV. Methodology
- V. Machine Learning Techniques

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Abstract:

The year 2020, has seen the advent of a pandemic that has affected the world as we know it globally. The origin reportedly from Wuhan, China, this pandemic is caused by COVID-19 which belongs to the family of Coronavirus. The increase of infection and mortality has shot up exponentially and has left mankind bewildered amongst the remains of the unseen disaster. During these times of hardship mankind has to face with a series of emotions. Analysis of all these emotions becomes a primary target for the well-being of an individual and mankind as a whole. The main motive of our study is to analyze these emotions correctly. Gathering these big chunks of data about this study from different social platforms like Twitter, Facebook, Instagram, etc. plays a major role. For this study we will be considering only the corona virus related tweets from Twitter. Analysis of all these tweets will give us a proper insight about the real emotions that the people has to face during these COVID-19 times. The main objective is to work with multinomial attributed to assess the sentiments more precisely. The next step is cleaning the data and labelling them for further processing. Hereafter a model is developed which is used to access the data and then predict the actual sentiment behind the tweet. The data is assessed using the binary-class and multi-class property with the cross-data evaluation of various machine learning algorithms to form the model. After tedious training of models, it is seen that the proposed model gives us a 96.58% accuracy with Support Vector Machine algorithm.

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Chapter 10

An Intelligent System for Securing Network From Intrusion Detection and Prevention of Phishing Attack Using Machine Learning Approaches

Sumit Banik Sagar Banik, Anupam Mukherjee

Book Editor(s): Rajdeep Chakraborty, Anupam Ghosh, Jyotsna Kumar Mandal

First published: 03 December 2021 | <https://doi.org/10.1002/9781119764113.ch10>

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Summary

Phishing attacks are one of the most popular attacks in compromising user's data and performing malicious activities. It was discovered during the mid-1990s, and to this present day, it is one of the severe cybercrime methods to hijack user's data. This is a serious issue as people still fall for the trap of logging into a phished website and giving out all the details which result in loss of bank balance, getting their files breached, and also the hacker trying to impersonate the person at a maximum level. Many algorithms are proposed to counter this attack. Various machine learning approaches are used to employ and check the detection of phishing websites. The problem is that there is no existing analysis at a detailed level about the URLs, the type of domains, origin, and other important aspects. To date, there is no exact way of saying whether a website is genuine or phishing related but the study of the website pattern and its structure will play an important role in dealing with the detection. In this study, we propose the estimation of the phishing websites and put in a detailed analysis comparing pre-existing malicious URLs which will help to filter the websites effectively and create a comparison of all the attributes in them. The advantages, drawbacks, and the comparison with the pre-existing research on this field have been discussed.

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FEEDBACK

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Load Frequency Control of a Wind Energy Integrated Multiarea Power System With CSA Tuned PID Controller

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Abstract— The main concern of frequency deviation (FD) in renewable energy (RE) integrated multiarea power system is the intermittent nature of the system inputs in accumulation to inconstant demand of load. This paper represents load frequency control (LFC) of a thermal-wind-thermal based multiarea hybrid power generating system. A robust proportional–integral–double derivative (PID) controller is applied to control the FD of the investigated power system. The gains of the applied controllers are optimized with Cuckoo Search Algorithm (CSA) technique. The responses obtained from the CSA tuned PID controllers are compared with conventional CSA tuned proportional-integral (PI) and widely applied proportional-integral-derivative (PID) controllers. From MATLAB simulation study it is observed that the applied controllers show much better dynamic responses as compared to PI and PID controllers in terms of lesser transient response, lesser overshoot, inclusive robustness to limit the FD within the acceptable limit taking integral square error (ISE) as an objective function.

Keywords— Hybrid power system, load frequency control (LFC), Cuckoo Search Algorithm (CSA), PID controller.

I. INTRODUCTION

Assimilation of RE sources with the conventional fossils fuel based generating system has become an appropriate choice as per the present scenario of energy sector. But the main challenge arises to generate power from the RE sources is the intermittent type of inputs which rules the output power and frequency of the entire power system [1]. Out of the RE sources photovoltaic (PV) and wind are the most protuberant sources due to their wide-spread availability as per geographical locations. Along with that as compared to PV wind is considered more prospective in mega range of power generation due to high power concentration and probable generation on day-night basis [2]. Recently the trend of power generation has been motivated towards the interconnection of mega-power coastal wind-farms with conventional thermal based power plants for a prospective power balance. But

when RE based areas are interconnected with the conventional fossils fuel injected area(s), LFC in such complicated system becomes a very challenging task. From the literature it can be observed that many researches have been done in recent past for LFC in single area and multi-area interconnected electrical power systems [3].

The prime objective of automatic generation and control (AGC) is to control the FD and the power in tie line power within a permissible limit throughout the distinction in both generation of power as well as load demand [1]. To mitigate the limits of open loop control system and to model closed loop controllers for interconnected power systems, many 1st order traditional controllers such as integral (I), proportional-integral (PI), proportional–integral-derivative (PID), are extensively applied for LFC studies [4]. A dual mode bat inspired optimization algorithm tuned PI controller for LFC studies in multi-area generating system is represented by [5]. However, there are few major scopes of improvements of PI controllers for better performance, like higher maximum deviation, unsuitable for slow moving process variables, longer response time and long oscillation time. Hybrid fuzzified integral control and PI with artificial intelligent have been discussed in [6]. But the dynamic responses of PI controllers are always with additional oscillations and settling time. Whereas the PID controller can be applied for moderate peak overshoot (PO) and constancy and that is why it is widely applied in industries along the additional features of flexibility for adjustment of system dynamics. Applications of several classical controllers for LFC studies are discussed by L.C. Saikia et.al. [7]. But the efficacy of PID controller can be enhanced more by adding one more derivative (D) controller with the conventional PID controller. For conventional widely applied PID controller the functions of Proportional (P), Integral (I) controller and Derivative (D) controllers are to reduce the rise time, improves the steady state error and to increase the overall stability of the power system. But only P and I controllers have the limitation of eliminating steady state error and fast dynamic response or transient response. Whereas the D controller can improve the stability of the system with reduced oscillations and better transient response. Thus, the performance of PID controller

Study on Information Diffusion in Online Social Network



Sutapa Bhattacharya and Dhrubasish Sarkar

Abstract Nowadays, Online Social Network (OSN) is very trendy in business, politics, and health care. This one can have the wider range of accessibility of information diffusion. The Online Social Network (OSN) is very significant as it provides interaction platform to the users across the globe. The impact joins both human attributes alongside community relationships. There are a group of individuals who has very strong connections to a range of social networks. These networks are capable of forwarding more information. So, it gives much better performance for single connection rather than multiple connections within a single network. Social influence plays a very important role in information diffusion. That's why information diffusion is the methodology where information transmits through certain target nodes over time among them. In this paper, some methodologies related to information diffusion, features, and limitations have been discussed. Delivering a detailed analysis, giving thoughtful social activities, and providing user's views are the main goals of this paper.

Keywords Information diffusion Social influence Online social network
Social network analysis

1 Introduction

In 1954, Barnes [1] has referred as "Social Networks" in the journal named as Human Relations. SixDegrees.com was the earliest Online Social Network (OSN) which was launched in 1997. After that, Facebook and Flickr in 2004, YouTube in 2005, Twitter in 2006, and Sina Micro-blog in 2009 came one by one.

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CHAPTER 13

Electrodes

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Abstract

This chapter deals with electrodes, the most important part of electrical circuits. With the need of emerging technologies, the upgrading of electrodes are mostly needed which in turn leads us from the ancient electrodes toward the advanced metal oxide electrodes. In this chapter, we will discuss the need, advantages, and classifications of metal oxide electrodes and focused on the crisis, which society will face due to use of fossil fuel electrodes. Recent progress in the field of mesoporous carbon incorporated metal oxide nanomaterials, especially metal oxide nanoparticles confined in ordered mesoporous carbon and 1D metal oxides coated with a layer of mesoporous carbon for high-performance supercapacitor applications, has been presented, not only for technological applications but also for academic interest.

13.1 Requirements to electrodes in electronic devices

An *electrode* is an electrical conductor which is used to make contact with the nonmetallic parts of a circuit (e.g., a semiconductor, an electrolyte, a vacuum, or air). The word “electrode” was invented by William Whewell which is a combination of two Greek words: *elektron*, meaning amber (from which the word electricity is derived), and *hodos*, meaning a way [1, 2].

In a vacuum tube or a semiconductor having polarity, two main or mostly used electrodes are anode and cathode. The electrode is designated as negative if electrons emerge from it and is named cathode. In a similar way, the electrode which receives electrons is designated as positive and named anode. There are many other electrodes which are typically used in several electronic devices, e.g., base, gate, control grid. In some electronics devices, an auxiliary electrode (also known as a third electrode) is used to make connection to the electrolyte so that a current can be applied to the working electrodes.

In one word, electrodes are used to provide current through nonmetal objects to alter them in different ways and to measure conductivity for numerous purposes.