

Effect of Covid Work from Home on the Health of Students and Employees based on Active Step Count and Various Parameters

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Abstract: *The COVID-19 pandemic has had a profound effect on students and employees mental and physical health, leading to increased rates of anxiety, depression, and post-traumatic stress and this effect has not ended. Physical activity has decreased, while screen time has risen, resulting in a decline in overall physical and mental well-being. This project aims to assess the ongoing impact of the pandemic on individuals' health and lifestyle by analyzing data collected through surveys. Using variables such as BMI, daily screen time, and daily step count, we have developed a model that accurately estimates the adverse effects on individuals' health. Leveraging data science, Python programming, machine learning, and web frameworks like Flask, our goal is to help individual students and employees make informed choices about their lifestyle and prioritize their health as the impact of pandemic is still the same*

Keywords: Step Count, covid, Data science, Python

I. INTRODUCTION

The COVID- 19 epidemic has had far- reaching consequences beyond its direct impact on physical health. The prolonged epidemic situation and the duty of strict measures similar as lockdowns and stay- at- home directives have significantly affected people's internal health and physical well- being, and situation is still the same. Rates of anxiety, depression, post-traumatic stress, and health-affiliated fears have increased, while openings for physical exertion and social commerce have dropped. also, the wide use of electronic bias and increased screen time have further contributed to the overall decline in health.

Feting the significance of addressing these issues, our design focuses on assessing the impact of the COVID- 19 epidemic on individualities' health and life. We've collected data from scholars and workers through checks to gain perceptivity into their health status and diurnal routines. By assaying variables similar as BMI, diurnal screen time, and diurnal step count, we aim to produce a model that directly estimates the adverse goods on individualities' health.

These enable us to reuse and dissect the collected data, developing a robust model that can give precious perceptivity into individualities health during the epidemic. Our model will take inputs similar as the use of spect, screen time, and other applicable parameters to determine an individual health status ideal of our design is to quantify the impact of the COVID- 19 epidemic on people's health and empower individualities to make informed choices about their life. By relating the factors contributing to the decline in physical and internal well- being, we can give recommendations and interventions to support individualities in perfecting their overall health..

II. LITERATURE REVIEWS

We conducted an extensive review of a diverse range of documents, manuals, and analytical papers relevant to our project concept.

Zainab abbas abdulhusseinwaeli., "Predicting covid-19 trajectory using machine learning" in 2020. Emerging technologies like the Internet of Things (IoT), smart computing, and cloud computing play a significant role in enabling continuous surveillance of cities to detect biological and chemical anomalies that pose risks to society and the environment. This research paper primarily concentrates on healthcare data, specifically in the context of cancer. The

study introduces a data science framework that incorporates an algorithm capable of predicting cancer cases by identifying cancerous cells. The algorithm's primary function is to forecast the presence of cancerous cells while preserving the intended meaning.

Gianni D'Angelo et al., in "Enhancing COVID-19 tracking apps with human activity recognition using a deep convolutional neural network and HAR images" in 2022. The objective of this research is to improve the efficiency of COVID-19 tracking applications through the implementation of a Convolutional Deep Neural Network (CDNN) as a human activity classifier. Our approach involves utilizing accelerometer sensor data from smartphones and converting it into HAR-Images, which are unique visual representations of ongoing activities. These HAR-Images can then be integrated as supplementary input within tracking applications, enhancing their functionality and accuracy.

"COVID-19 Candidate Treatments, a Data Analytics Approach" in 2020. This project posed several challenges throughout its duration. One major hurdle involved dealing with an immense volume of unstructured data. Moreover, this data continued to expand over time, while its underlying structure frequently underwent modifications. The project, however, yielded valuable insights that would have remained concealed without harnessing substantial computational power and leveraging advanced machine learning algorithms.

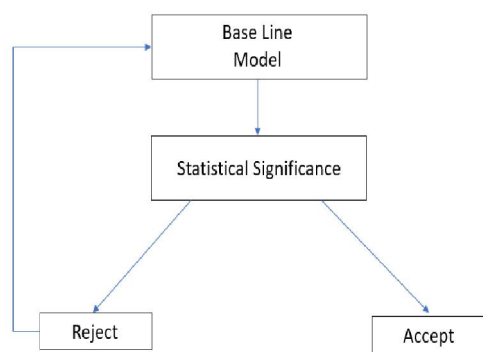
"COVID-19 Spread prediction Based on Food Categories using Data Science" in 2020. The primary objective of this study is to examine the correlation between the utilization of various preventive measures and the transmission dynamics of the novel coronavirus (COVID-19). Additionally, the research aims to forecast the spread of the virus based on these preventive practices. The inspiration for this investigation was derived from an analysis of previous studies investigating the immune system's response to the COVID-19 virus.

"Data science for healthcare predictive analytics" in 2020. The availability of an automated predictive approach for healthcare and disease analytics would be highly advantageous. This paper emphasizes healthcare mining as its focal point, which entails the computational extraction of knowledge from healthcare data. Specifically, we introduce a data science framework encompassing two predictive analytic algorithms designed to accurately forecast cancer incidence trends. By leveraging information from cell data in various data samples, these algorithms can predict the presence of cancerous cells. Our evaluation results, obtained from real-life datasets pertaining to breast cancer, validate the efficacy of our data science framework and predictive algorithms in healthcare data analytics.

III. METHODOLOGY

The primary objective of this process is not only to develop computational systems capable of handling vast amounts of data but also to create visualization tools that aid scientists in comprehending the information. The data science lifecycle was established to address the complexities of big data concerns and facilitate data science initiatives. It encompasses several key phases: problem formulation, data collection, data preparation, data exploration, data modeling, model assessment, and model deployment. Managing and processing such extensive data volumes presents one aspect of the challenge.

The other aspect involves designing accessible and interactive data visualization tools that enable researchers to harness the power of computation efficiently, thereby maximizing the potential benefits for students. The majority of the participants in this event were individuals affiliated with colleges and universities.



A cross-sectional comparative research study was conducted to measure mental health issues among students. This study aimed to assess and compare the prevalence of mental health issues among a diverse group of students at a particular point in time. The Patient Health Questionnaire (PHQ) is a widely used tool for assessing depressive and anxiety symptoms in patients. It consists of several self-report questionnaires, including the PHQ-9 for depression and the Generalized Anxiety Disorder (GAD-7) questionnaire for anxiety.

The PHQ-9 is a nine-item questionnaire that assesses the severity of depressive symptoms. The total score on the PHQ-9 can help healthcare professionals gauge the severity of depressive symptoms and make a preliminary diagnosis of depression.

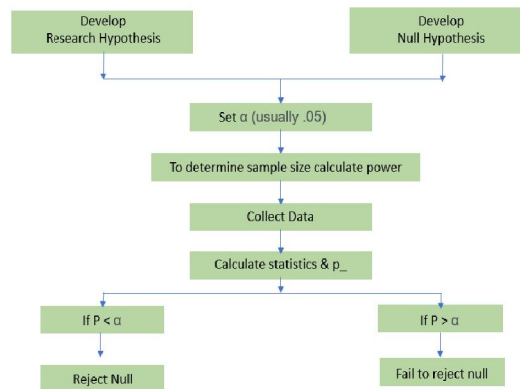
The GAD-7 is a seven-item questionnaire used to assess the severity of generalized anxiety disorder symptoms. It measures how often patients have experienced anxiety symptoms over the past two weeks, such as feeling nervous, having trouble relaxing, or being easily annoyed. Both the PHQ-9 and GAD-7 are considered reliable and valid screening tools for depression and anxiety, respectively. If you or someone you know is experiencing symptoms of depression or anxiety, it's recommended to consult a healthcare provider for a proper assessment and guidance.

The p-value indicates whether or not our test results are significant. However, we need two pieces of information to do a chi-square test and determine the p-value:

(1) Degrees of freedom.

(2) The alpha level(α)

- *Null Hypothesis*:- the null hypothesis (H_0) is a statement that assumes there is no significant difference or relationship between variables or populations being studied. It is a hypothesis that is tested against an alternative hypothesis (H_1), which suggests that there is a significant difference or relationship.
- *Alternate Hypothesis*: The alternative hypothesis is formulated to capture the possibility of an effect or relationship that goes beyond what would be expected due to random chance alone. It suggests that the observed data provides evidence for a specific claim or hypothesis.



b) Flowchart for Hypothesis Testing

- *Level of significance*: The level of significance, denoted by the symbol alpha (α), represents the probability of incorrectly rejecting a true null hypothesis. It determines the acceptable risk of making a Type I error, which occurs when we conclude that there is a significant difference or relationship when, in reality, there isn't one.
- *Critical values*: The critical values are determined based on the desired level of significance (alpha) and the degrees of freedom associated with the statistical test. The critical values divide the distribution into critical regions or rejection regions.
- *Statistics test*: It's represented by the letter t and is determined by the test we perform. It is a deciding factor in whether the Null Hypothesis is accepted or rejected.

IV. CONCLUSION

Our project addresses the COVID-19 pandemic's impact on mental and physical health. Through data analysis, we developed a model that accurately estimates health effects based on factors like BMI, screen time, and step count.

Using Python, machine learning, and Flask, we empower individuals to assess their lifestyle and make informed choices for their well-being. Our project contributes to understanding and intervening in mental and physical health issues during the pandemic, helping students and employees improve their health despite challenging circumstances.

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