Project Idea

DETECTION OF PARAMETERS FOR CHANGING THE COLLECTIVE SOCIAL BEHAVIOUR, FOR ADOPTING A HEALTHY LIFESTYLE

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Abstract

Addressing critical global issues via engineered social transformation is the key idea behind the proposed work. This change can be triggered by small changes in parameters on social system by the most influential agents. Finding the right condition and applying small changes to it can leads to a strong macroscopic change.
As we all know the criticality of Diabetes 2, especially in the GCC region. It is obvious that one of the major reason behind this is people's unhealthy lifestyle. Without depending on the conventional methodes of creating awareness about the importance of choosing a healthy lifestyle, we are intentionally trying to find out the pulse of people and their behavioral pattern to given stimulus, and tune their mind to follow the healthy lifestyle without any visible dramatic campaign activities.

Introduction

Diabetes is an extreme condition, affecting a diverse age group of people across the world. Those who are diagnosed with diabetes experience significant health concerns as the condition itself proven to be the catalyst for other major health problems. The disease also kills more people every year than breast cancer and AIDS combined. Diabetes has become one of the largest public health problems to date. Decreased physical activity, over nutrition, and nutrition transitions caused by changes in lifestyle contribute to the increasing incidence of chronic metabolic diseases as well as deaths related to them. Complications from diabetes and the most prevalent co-morbid conditions include kidney disease, amputations, blindness, obesity, hypertension, hypoglycaemia, dyslipidemia, cardiovascular disease and risk of heart attack or stroke.

According to the International Diabetes Federation (IDF), the global population with diabetes mellitus (DM) is projected to be 700 million by 2045. Many studies suggest people with diabetes, especially type 2 Diabetes, are at higher risk of eventually developing Alzheimer's as both conditions involve impaired glucose homeostasis and altered brain function. The mutation studies in Arab population which might influence DM induced Alzheimer's Disease. Incidence of DM have increased dramatically due to accelerated economic lifestyle changes that results in reduced physical activity, higher intake of refined carbohydrates . Out of 34 million people diagnosed by diabetes in the MENA region, 17 million has increased risk of diabetes induced disorders.

The clinical and pre-clinical studies have demonstrated that Alzheimer's Disease and Diabetes Mellitus share common pathological mechanisms hence, could act as a cofactor in AD progression.

Prevention of diabetes and other chronic metabolic diseases has become extremely important, requiring prompt action of individuals, society, and government. It requires experts to put forward proposals and specific approaches, governments to increase education, and the active participation of all citizens. If these approaches are used, then diabetes and other chronic metabolic diseases would no longer be unconquerable diseases affecting human health, and their prevention would greatly enhance the quality of life

In conclusion, our Research Topic aims to enhance the diabetic research in the Middle east region by reducing the burden of Diabetes and its associated complications, by reducing the lack of structured early diabetes prevention and management programs using Machine Learning and Artificial intelligence. Machine learning programs can identify people at high risk for diabetes based on genetic and metabolic factors. Diabetes is associated with various complications and a significant morbidity and mortality. It is important to intervene not only to treat but also to prevent and make a timely detection of diabetes. Management of diabetes is challenging because 1 of 2 adults with diabetes are undiagnosed, yet 10% of global health expenditure (US$ 760 billion) are spent on diabetes. Therefore the solution has to be developed urgently.
The topic will make a difference in the Middle East community for a better healthier generation and hence unravel the great mindsets.The health is placed on the top in the development of a country. The investments in health would accelerate the economic development. As long as individuals of a country are healthy, their contribution to production and growth would increase.

Implementation Part

The implementation part can be divided into 3 sections. The first part deals with the classification of people into different groups, Second part of the work is about finding the most influential node locally and globally. Third part is the crucial and challenging part, classify people on different threshold level based on their behaviour pattern to a particular stimulus, and how to change their normal behaviour pattern with tuning right parameter by most influential nodes.

Classification of people

Online social networking sites with the frequent human interactions will provides information about individual users. Their interactions and relationships is the base of node clustering/node classification. We can provide meaningful label to each nodes based on their views related to concepts like religion, politics, sports etc. Here the concept of homophily could be used.Presence of homophily among nodes stimulates the formation of communities among nodes. Deep learning(DL) based approaches for node classification in social media have provided better accuracy as well as insight.

DL based strategies for node classification can be divided in to two types mainly. 1) Community based 2) Role based. In community based classification nodes present in the network are divided into different groups, Here nodes in the same group are closely packed. In role based approaches nodes are divided based on their roles in a given network.

Identifying the most influential persons

Rigorous Community and node based classification help in identifying the local influence and global influence in the given network. Here by local influence means the node with better reach and influence on other nodes inside the given community. Global influence is the impact of node in the entire network.

Here our task is to find the best number of people or nodes in the given network who could possibly influence other people in the network and maximize their influence. Their influence range could mathematically represented by using weights ranging from 0 to 1 while they are activated.

Real world networks are more complex and information are nonlinear in nature, that is the main reason why traditional approaches are least applicable in this type of scenarios. DL based approaches are highly effective here, since it is less expensive, more specific to these scenarios and also provide flexible community detection approach.

Changing the collective behavior of Society

This the most challenging as well as the crucial part of the project. Via extracting the social network activities of people in a given network we will get an idea about the action of a person to a particular stimulus and we can divide the people in to different threshold level based on the gravity of stimulus for response. threshold 0 means the person reacts for no reason and 100 means he will not react under any circumstances. By finding the most influential node, we could understand how to propagate our parameters in the network fast and how to maximize the influence. By the classification of people into various threshold level along with the past social media activities of people, we could find the basic pulse of the society and what all factors will affect their nature of response and by using these information we can find the right parameters for changing the behavioural pattern of the society.