SYNOPSIS OF THE PROJECT

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Project Title	Personalized medicine Redefining Cancer Treatment

Description of Project:

Cancer is a group of more than 100 diseases caused by abnormal cell growth that may spread to other parts of the body. Therefore, cancer treatment is considered one of the challenges in the medical field. According to the World Health Organization (WHO) "Cancer is the second leading cause of death worldwide; there were 9.6 million deaths in 2018". As scientists have learned more about cancer, they have found that some mutations are commonly found in several types of cancer so cancer tumors can have thousands of genetic mutations. Because of this, cancers are categorized by the types of genetic alterations that are approved to be the driver, not only by where the tumor developed in the body and how the cancer cells look under the microscope. They also have found that certain treatments worked better for some patients than for others which means that, the response of patients with the same cancer type and same treatment plan is different. Now, cancer treatment tends to personalize medicine (also known as precision medicine), taking into account an individual's genetic profile and medical or disease history before treatment, dealing with each DNA sequence as a separate case, and analyzing its mutations which is a time and effort consuming task. Studying each patient DNA sequence requires a medical team with several working days to make a decision for the single patient which is too difficult to do with the high number of patients. So, recently the effort is exerted in replacing the human effort with artificial intelligence-based algorithms to study the DNA sequence, extract its mutations and study the various treatment effect on DNA. In this we use the machine and deep learning algorithms to personalize cancer treatments.

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