**Heimdall: An Automatic Access Gate System for Covid 19**

**Story:**

Our idea for an automatic access gate system came about from just witnessing what was happening in our own city. The city’s biggest and most popular wholesale market became the epicentre of the largest cluster of the novel corona virus disease in the state. Keeping the large sprawling market open in the midst of an epidemic with little to no precautionary measures proved to be extremely costly for the state.

Furthermore, another important issue that the world is facing right now is the number of doctors, nurses and essential workers getting affected by the disease. This could be controlled to a large extent by taking some protective measures. In hospitals, grocery stores and other public places, there’s often a designated person checking people’s temperature, providing them with sanitizer and checking if they are wearing a mask. While this is a very essential step, this does put the person in charge of checking, at a higher risk of contracting the disease. Hence to eliminate the need for the presence of person, the idea of an automatic access gate system – Heimdall, came into existence.

**How does Heimdall actually work?**

Heimdall is based on simplicity, effectiveness and practicality. It is a system exclusively built for the pandemic; technologically designed to make the entire process of measuring, assessing and allowing people, in the “non contact” way.

When a person comes in front of Heimdall, the camera or the eye of Heimdall screens the person for their blood-oxygen or SpO2 levels- which is a crucial indicator of a Covid-19 affected individual as opposed to the conventional contact based and unsafe method of measuring Spo2 levels using a pulse oximeter. Several researches have proven that a low Spo2 level is one of the most common and serious effects of the novel corona virus. Of course, low Spo2 level could be due to a plethora of other reasons too. To make the screening process much efficient and to eliminate errors; Heimdall comes with an Infrared Thermometer for non-contact temperature measurement.

We believe “Prevention is better than cure” is a gospel truth and have included an automatic hand sanitiser or soap dispensing system using Infrared Proximity sensors for everyone crossing Heimdall. The camera or the eye of Heimdall also checks for a face mask on the person. Detection of face mask and evaluation of the blood oxygen levels in the person through the camera is achieved through Haar Cascade Classifier and Image Processing techniques respectively. Heimdall, the automated gate access system, opens or allows the person to cross only when the Spo2 levels & body temperature are well within the normal range, and the person is wearing a mask. Along with this, the automated hand sanitiser dispensing system makes sure to increase safety and protection. In this way, the cost effective and efficient Heimdall proves to be extremely useful in developing nations with crowded places to alleviate community spreading. It acts as a true protector, helping people and aiding medical professionals fight against the pandemic.