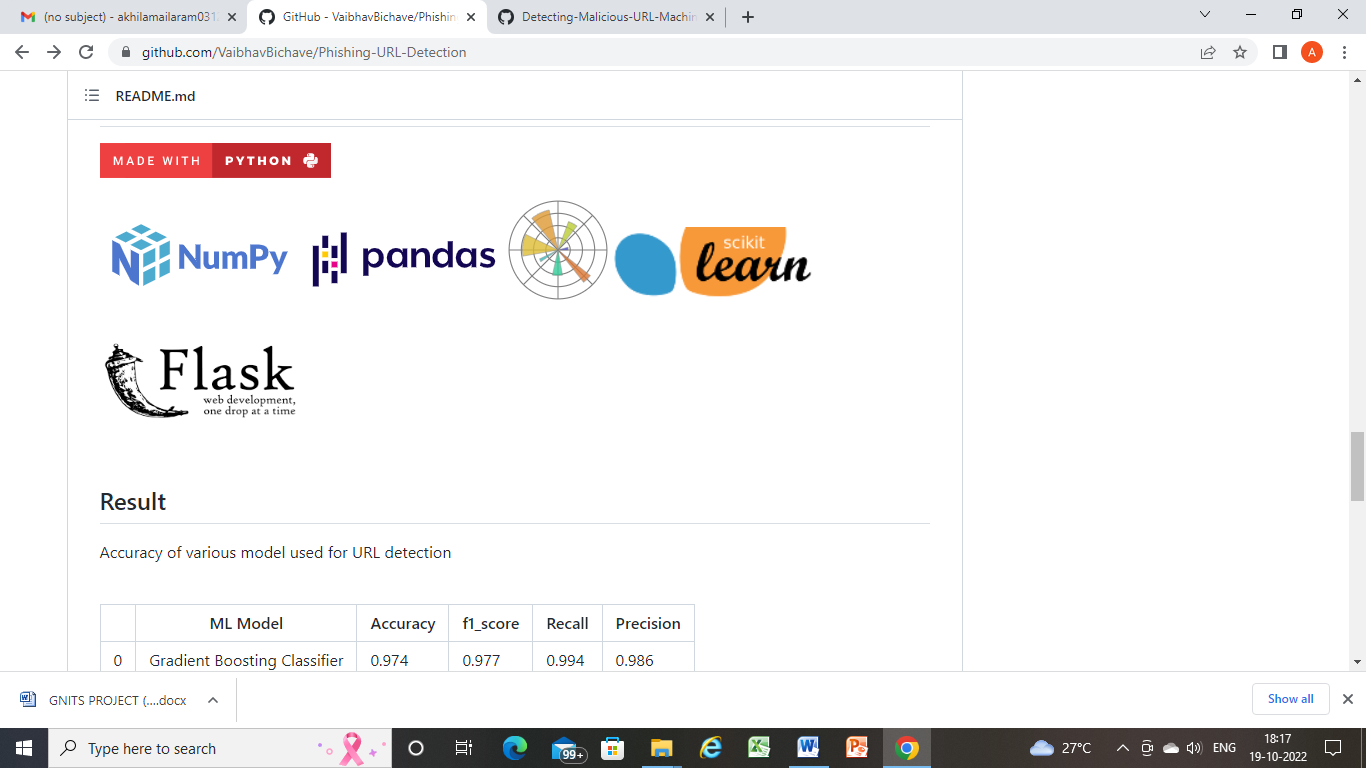
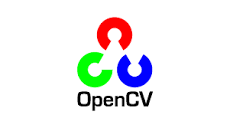
**Introduction:**

The increase in world population has resulted in rise in volume of both our domestic and industrial waste materials.These materials can either be organic toxins or inorganic toxins that directly or indirectly find their way into global waters, hence, pose a serious threat to the continued existence of our entire eco-system. The water quality would have a great impact on aquatic creatures, agricultural irrigation, human life, and so on. The quality of water seriously affects human health and is one of the important factors for global economic development. Therefore, the quest for a simple, quick, low cost, and reliable system for monitoring the water quality is of great practical importance.

Using automatic water quality sensors has disadvantages such as high cost and difficult maintenance. Digital image processing technique based on computer vision, combined with the use of Machine learning and Deep learning algorithms, provides a new motive for water quality evaluation.

**Technologies used:**



**Datasets used:**

The standard dataset for water quality detection was not available. So around 2000 sample images are collected from a standard websites. All the sample images are defined in the category according to the expert knowledge. Each category includes a certain number of images and there are a total of 4 categories for the samples, representing the different grades of water quality.

The RGB colour moments are extracted from the colour of water images and tabulated to form the final data set.



**Conclusion:**

The timely and effective monitoring of water quality is crucial for ensuring the productivity of aquatic products, hence looking for fast, automatic, less expensive, and accurate methods to monitor the water quality is of great realistic significance.

The water quality monitoring method is implemented using image processing and machine learning techniques. After collecting the water sample images including the Clean water, Polluted water, Mud water and Algae water, the crucial features of water colour images are extracted and performed the image classification using machine learning and CNN methods for the evaluation of water quality. The relevant training is carried out through the data and the results were compared with CNNs, which is a state-of-the-art machine learning model for image recognition.

In the absence of massive training samples, the proposed approach achieves high classification accuracy i.e 93.8%, even if the optimal classifier i.e Sequential CNN model is adopted. In future development, we intend to deploy the model using suitable frame work and evaluate the wide range of water quality automatically. The accuracy of proposed model is aspired to be improved in the next stage by adding some more data samples and by modifying the model parameters.