**Model Development Phase Template**

|  |  |
| --- | --- |
| Date | 10 July 2024 |
| Team ID | 740004 |
| Project Title | Rising Waters: Machine Learning Approach To Flood Prediction |
| Maximum Marks | 5 Marks |

**Feature Selection Report Template**

In the forthcoming update, each feature will be accompanied by a brief description. Users will indicate whether it's selected or not, providing reasoning for their decision. This process will streamline decision-making and enhance transparency in feature selection.

|  |  |  |  |
| --- | --- | --- | --- |
| **Feature** | **Description** | **Selected (Yes/No)** | **Reasoning** |
| Temp | Measures the temperature of the air. | Yes | Temperature variations can affect the rate of evaporation and precipitation, which are crucial factors in flood prediction. |
| Humidity | Represents the amount of water vapor in the air. | Yes | High humidity levels can indicate the likelihood of heavy rainfall, which is a critical factor in flooding. |
| Cloud Cover | Measures the fraction of the sky covered by clouds. | Yes | Cloud cover can be indicative of impending weather conditions such as storms, which are significant in predicting floods. |
| Rainfall | Amount of rain that falls over a given period. | Yes | Directly influences the likelihood of floods; higher rainfall increases the risk of rising water levels. |
| Soil Moisture | Amount of moisture present in the soil. | Yes | High soil moisture can reduce the ground's ability to absorb additional rainfall, increasing runoff and flood risk. |
| Wind Speed | Measures the speed of the wind. | No | While wind speed can influence weather patterns, it is less directly correlated with flooding compared to other features like rainfall and river levels. |
| Precipitation | Total precipitation, including rain, snow, sleet, and hail. | Yes | Like rainfall, total precipitation is critical in assessing the potential for floods. |
| Urbanization | Percentage of land covered by urban infrastructure. | Yes | Urban areas with impermeable surfaces can lead to increased runoff and higher flood risk. |
| |  | | --- | | Vegetation |  |  | | --- | |  | | |  | | --- | |  |  |  | | --- | | Type and density of vegetatio  cover. | | No | While vegetation can affect runoff and soil absorption, its impact is more indirect compared to other features like rainfall and soil moisture. |
| Groundwater Levels | Measures the level of water present in underground aquifers. | Yes | Rising groundwater levels can contribute to surface flooding, especially in low-lying areas. |
| Drainage Density | Length of all the streams and rivers in a drainage basin divided by the area of the basin. | Yes | High drainage density can indicate a higher potential for flooding as water is collected and channeled more quickly through the drainage network. |
| Pus cell clumps | Pus cell clumps, also known as white blood cell (WBC) clumps, are aggregations of white blood cells typically seen in the urine. | No | The above we get the required, so we don’t need to consider this. |
| Bacteria | Bacteria in the urine, also known as bacteriuria, is a common finding that can indicate a urinary tract infection (UTI) or other urinary system issues. | No | The above we get the required, so we don’t need to consider this. |
| Sugar | Sugar, specifically glucose, in the urine (glycosuria) can be an important diagnostic marker. | No | The above we get the required, so we don’t need to consider this. |
| Blood urea | Urea is a waste product formed in the liver as a result of protein metabolism and is normally excreted by the kidneys. | No | The above we get the required, so we don’t need to consider this. |
| Serum Creatinine | It is a waste product produced from the normal metabolism of muscle cells and is usually excreted by the kidneys. | No | The above we get the required, so we don’t need to consider this. |
| Sodium | Sodium is an essential electrolyte that plays several crucial role. | No | The above we get the required, so we don’t need to consider this. |
| Potassium | Potassium is a vital mineral and electrolyte in the human body. | No | The above we get the required, so we don’t need to consider this. |
| Hemoglobin | Hemoglobin is a protein in red blood cells responsible for transporting oxygen from the lungs to the rest of the body and returning carbon dioxide from the tissues back to the lungs. | No | The above we get the required, so we don’t need to consider this. |
| Packed cell volume | Packed Cell Volume (PCV), also known as Hematocrit, is a medical laboratory measurement that indicates the proportion of blood that is made up of red blood cells. | No | The above we get the required, so we don’t need to consider this. |
| White blood cell count | White Blood Cell Count (WBC) measures the number of white blood cells in a given volume of blood. | No | The above we get the required, so we don’t need to consider this. |
| Red blood cell count | **Red Blood Cell Count (RBC)** measures the number of red blood cells in a given volume of blood. | No | The above we get the required, so we don’t need to consider this. |
| Hypertension | Hypertension, or high blood pressure, is a chronic medical condition where the force of the blood against the artery walls is consistently too high. | No | The above we get the required, so we don’t need to consider this. |
| Appetite | Appetite refers to the natural desire to eat food. | No | The above we get the required, so we don’t need to consider this. |
| Pedal edema | Pedal Edema refers to the swelling of the feet and ankles due to the accumulation of fluid in the tissues. | No | The above we get the required, so we don’t need to consider this. |