Microbes Classification

Microbes are tiny living things that are found all around us and are too small to be seen by the naked eye. They live in water, soil, and in the air. The human body is home to millions of these microbes too, also called microorganisms.

Microbes come in a huge variety of shapes - everything from rods to spheres, even corkscrew shapes. They’re all about the same size, with some a little bigger than others and smaller than others. They don’t have much of a color unless we apply a stain to them, which we sometimes do to see them under the microscope.

Microbes can be useful as well as harmful. Certain microbes cause severe infections and diseases and can also spoil food and other materials. While others play an important role in maintaining environmental balance.

Your Task is to

Build a Machine Learning model that predicts to which class a microbe belongs to.

Data Description

1.Solidity: It is the ratio of area of an object to the area of a convex hull of the object. Computed as Area/ConvexArea.

2.Eccentricity: The eccentricity is the ratio of length of major to minor axis of an object.

3.EquivDiameter: Diameter of a circle with the same area as the region.

4.Extrema: Extrema points in the region. The format of the vector is [top-left top-right right-top right-bottom bottom-right bottom-left left-bottom left-top].

5.Filled Area: Number of pixels in FilledImage, returned as a scalar.

6.Extent: Ratio of the pixel area of a region with respect to the bounding box area of an object.

7.Orientation: The overall direction of the shape. The value ranges from -90 degrees to 90 degrees.

8.Euler number: Number of objects in the region minus the number of holes in those objects.

9.Bounding box: Position and size of the smallest box (rectangle) which bounds the object.

10.Convex hull: Smallest convex shape/polygon that contains the object.

11.Major axis: The major axis is the endpoints of the longest line that can be drawn through the object. Length (in pixels) of the major axis is the largest dimension of the object.

12.Minor axis: The axis perpendicular to the major axis is called the minor axis. Length (in pixels) of the minor axis is the smallest line connecting a pair of points on the contour.

13.Perimeter: Number of pixels around the border of the region.

14.Centroid: Centre of mass of the region. It is a measure of object’s location in the image.

15.Area: Total number of pixels in a region/shape.