***SVM with kernels***

**Data Parsing:**

skipping unneeded the initial 7 lines , the function read data extracts data from a file and converts it to a NumPy array.

**Data Preparation:**

It divides the dataset into features (X) and labels (y), converting labels to integers and splitting data into training and testing sets.

**SVM Classifier Setup:**

Three SVM classifiers (linear ,RBF, Polynomial), assuming c = 10.

**Model Training and Evaluation:**

Each classifier is trained on the training data, and accuracy is evaluated using the test data.

**Visualization:**

It is classified using colours of each class.

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| --- | --- | --- | --- |
| Dataset | Choice of Kernel | Accuracy of SVM model | Visualization |
| **Aggregation** | Linear | 1.00 |  |
| **Compound** | RBF | 0.93 |  |
| **Flame** | RBF ,Poly | 1.00 |  |
| **Jain** | RBF | 1.00 |  |
| **Path based** | RBF | 0.98 |  |
| **Spiral** | RBF | 1.00 |  |

To run the code 3 libraries, need to be installed:

* *NumPy*
* *Matplotlib*
* *scikit-learn.*

The visualization could be changed according to data and different kinds of kernels that effect on the decision boundary and model accuracy.