In the research, we decided to use several models to classify the fruits. I will show you tow of them.

The first one is SVM.

Support Vector Machine (SVM) is a commonly used supervised learning algorithm for binary and multi-class classification tasks. It is often chosen for its efficient classification in high-dimensional space and its ability to perform well on small samples. This makes SVM particularly suitable for fruit classification, where multiple features such as color and size need to be considered.

The core idea of SVM is to find an optimal hyperplane that can separate different classes of samples. The objective is to maximize the margin, which is the distance between the hyperplane and the support vectors - the sample points closest to the hyperplane. By maximizing the margin, SVM enhances the robustness and generalization capability of the classification.

SVM employs different techniques for different data scenarios. For linearly separable data, it uses hard margin maximization to find the optimal hyperplane. However, when faced with linearly inseparable or noisy data, SVM introduces the concepts of soft margin maximization and kernel functions.

The ability of SVM to adapt to different data distributions is another advantage. By selecting appropriate kernel functions, SVM can effectively handle various data patterns.

Considering these advantages, we have decided to incorporate SVM as one of our fruit classification models.