Machine Learning Course Project Proposal

Software Requirements Classification

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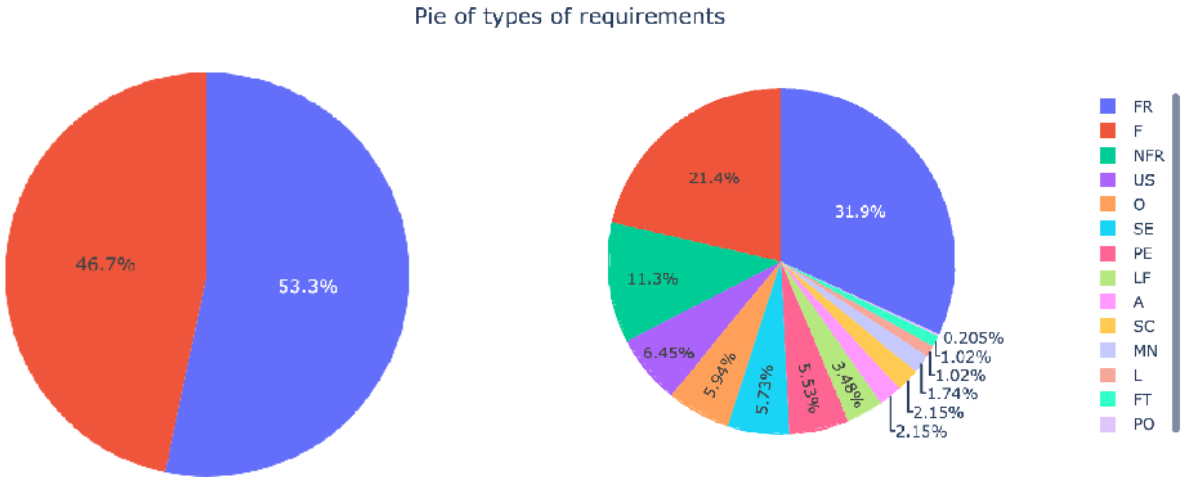
Introduction

The inception of software projects critically depends on the accurate gathering and classification of requirements. This project aims to leverage machine learning to automatically distinguish between functional and non-functional software requirements, streamlining project management and enhancing development efficiency.

Data

An exhaustive search yielded a singular dataset [1] comprising 1,000 entries of categorized software requirements, initially spread across 14 distinct classes. Given the dataset's limited volume, a granular classification into 14 categories might impede the effectiveness of the project. To circumvent this, a strategic decision was made to combine these into two broad classes: functional and non-functional. This simplification not only diminishes the complexity of the classification task but also promotes a balanced distribution of data. The dataset will be partitioned into a training set (70%) and a test set (30%), facilitating a rigorous model training and evaluation process.



Machine Learning Models:

Employing the Scikit-learn library, the project will develop, fine-tune, and evaluate the following models:

- Logistic Regression
- Support Vector Classification (SVC)
- K-Nearest Neighbors (KNN)
- Naive Bayes
- Decision Trees (with and without AdaBoost)
- Voting Classifier (combining the above models)

Each model's performance will be rigorously compared to identify the most efficient algorithm for our classification task.

Bibliography

[1] "Software requirements dataset," [Online]. Available: https://www.kaggle.com/datasets/iamvaibhav100/software-requirements-dataset.