Victor Morgan
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CSC-570
Dr. Osunmakinde

Conversion to my AI field of choice

For my first KNN Classifier model I decided to make a loan approval predictor. The model is trained on a dataset with 13 predictors and 1 target. The model also allows predictions where the user enters 10 facts/predictors about the customer with one predictor being calculated automatically. I've also ensured that the user can see what predictors can be entered for those that need specific casing and/or spelling to match what's already being considered.

Developer Mode

I created a developer mode for system optimization. When it comes to being a developer and working with different datasets optimal hyperparameter values may vary. For this program I decided to make it easier to find the optimal hyperparameters by building in tuning for developers. The program asks the user if they're a developer or not and then runs the hyperparameter tuning code if they indicate they are. If not it runs the code as it typically would for a user. This section of the program trains and checks the accuracy of the model using various test sizes, and a range of nearest neighbor values. I've also ensured the programs only tests odd nearest neighbors values for a bit of optimization on that end.

Encoders for non-binary predictors

I also modified the system to allow for the easy creation of new encoders for non-binary parameters. I look through the columns and create multiple label encoders which are stored in a dictionary. This makes it easier to expand later if a different dataset with more predictors is made available, or if this application is applied at a different organizations that considers different predictors.

Data Visualization

My last modification was the implementation of the graphs. I changed the scatter plot to show the different incomes across ranges. I've also created a bar graph to show the different ages and their approvals. This combination helps understand the data more as well as the organization's preferences as it comes to approving or denying loans. What I've been able to determine is that age is not as important as income is, and likely not weighted as being as important as other factors. I've also filtered out any major outliers from being displayed on the graph, as they disrupted the clean, ordered view.