In propose work we are employing following strategy to enhance Botnet prediction accuracy

1. Features Normalization: First we are employing MINMAX features scaling technique to normalize dataset features between 0 and 1. In machine learning algorithm fits very well when values ranges between 0 and 1
2. SMOTE Oversampling: dataset often collected from various repositories and Botnet data we are collecting from KAGGLE repository and often this datasets suffer from imbalance issue. Imbalance means one class contains huge number of records or samples and other class may contains fewer number of samples and in this situation algorithms starts over-fitting because of one class features dominating other class features. To overcome from such imbalance issue we are employing SMOTE algorithm which will generate synthetic new samples for all the classes which contains fewer samples and make the dataset balance
3. Bayesian Optimization Gaussian Process: All machine learning algorithms will have some parameters values like number of features to select, tree depth, max leaf nodes and this parameters are known as hyper parameters and selecting one form of parameters compare to other parameters will show variation in algorithm prediction accuracy. So by employing Bayesian Gaussian optimization process we can select hyper parameters which help ML algorithm in getting better accuracy.

Gaussian Processes (GP) are typically used for Bayesian optimization because they not only provide a mean prediction for each point but also quantify the uncertainty (variance) of that prediction. This is important in Bayesian optimization because it allows us to balance exploration and exploitation. Exploration refers to trying new points in the search space to learn more about the objective function, while exploitation refers to focusing on the most promising points in the search space.