

This summary is the result of all the modeling processes for water quality case studies which include the support vector machine model, random forest classifier, k-nearest neighbors, and gradient boosting classifier.

Following are the results of precision, recall, and f1-score before tuning

Model	Label	Precision	Recall	F1-score
Support vector classifier	0	0.95	1.00	0.97
	1	0.95	0.61	0.74
Random forest classifier	0	0.96	0.99	0.98
	1	0.94	0.71	0.81
K-nearest neighbors	0	0.91	0.99	0.95
	1	0.69	0.22	0.33
Gradient boosting classifier	0	0.97	0.99	0.98
	1	0.92	0.74	0.82

And here are the results of precision, recall, and f1-score after tuning

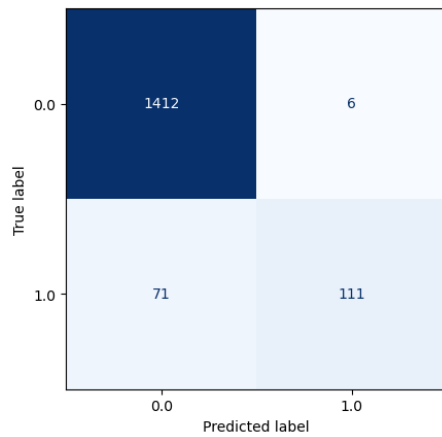
Model	Label	Precision	Recall	F1-score
Support vector classifier	0	0.96	0.99	0.98
	1	0.91	0.71	0.80
Random forest classifier	0	0.98	0.99	0.98
	1	0.94	0.82	0.87
K-nearest neighbors	0	0.92	0.99	0.96
	1	0.89	0.35	0.50
Gradient boosting classifier	0	0.98	1.00	0.99
	1	0.96	0.83	0.89

Based on observations and it is known that the purpose of this case study is to be able to avoid false positives as little as possible so that there is no guessing error where the label 0 is guessed 1 which means when the water is not safe it turns out that we guess it is safe, that is what must be avoided so based on the score results each model with tuning or without tuning

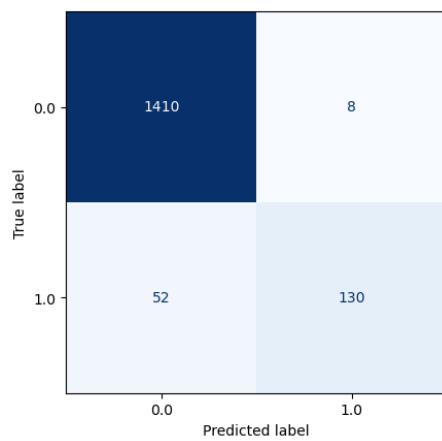
I prefer to use the Support vector classifier model before tuning because it manages to guess false positives with 6 errors in guessing, it's very good compared to other models,

The following is a confusion matrix for each model with the smallest false positives

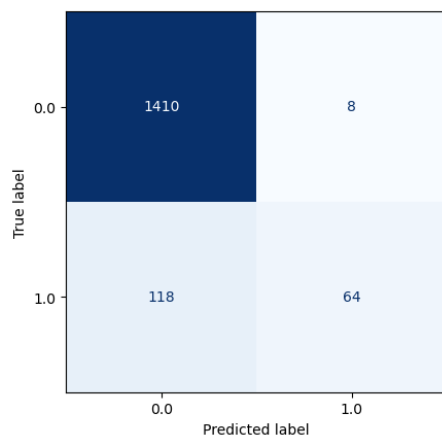
1. Support vector classifier



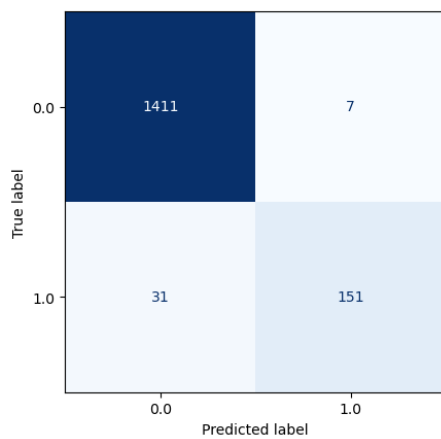
2. Random forest classifier



3. K-nearest neighbors



4. Gradient boosting classifier



Thank you for watching my project in making a model to predict whether water quality is safe to drink or not.

I also use this project for my portfolio in applying for jobs, I hope to work in the data scientist field because I want to explore more about the world of data science with high curiosity :)

I hope you like it, Keep learning and stay cool

Greetings,

Farchan Akbar