

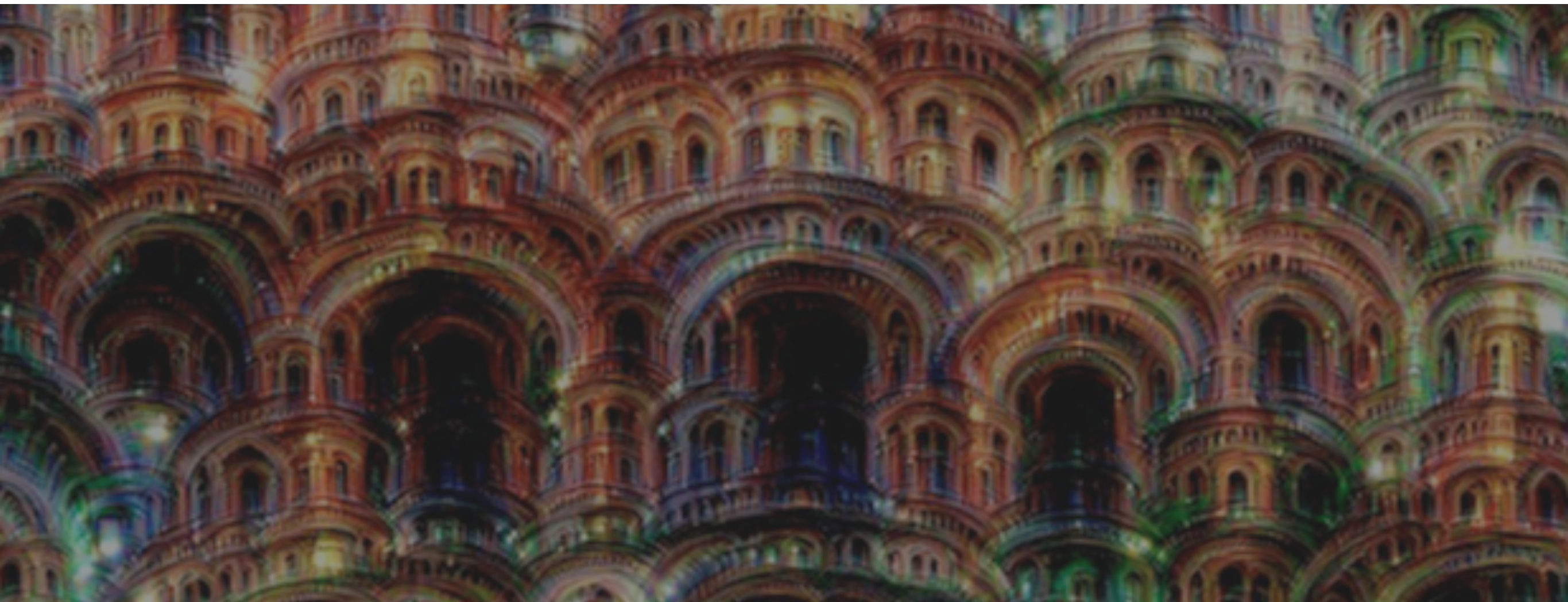


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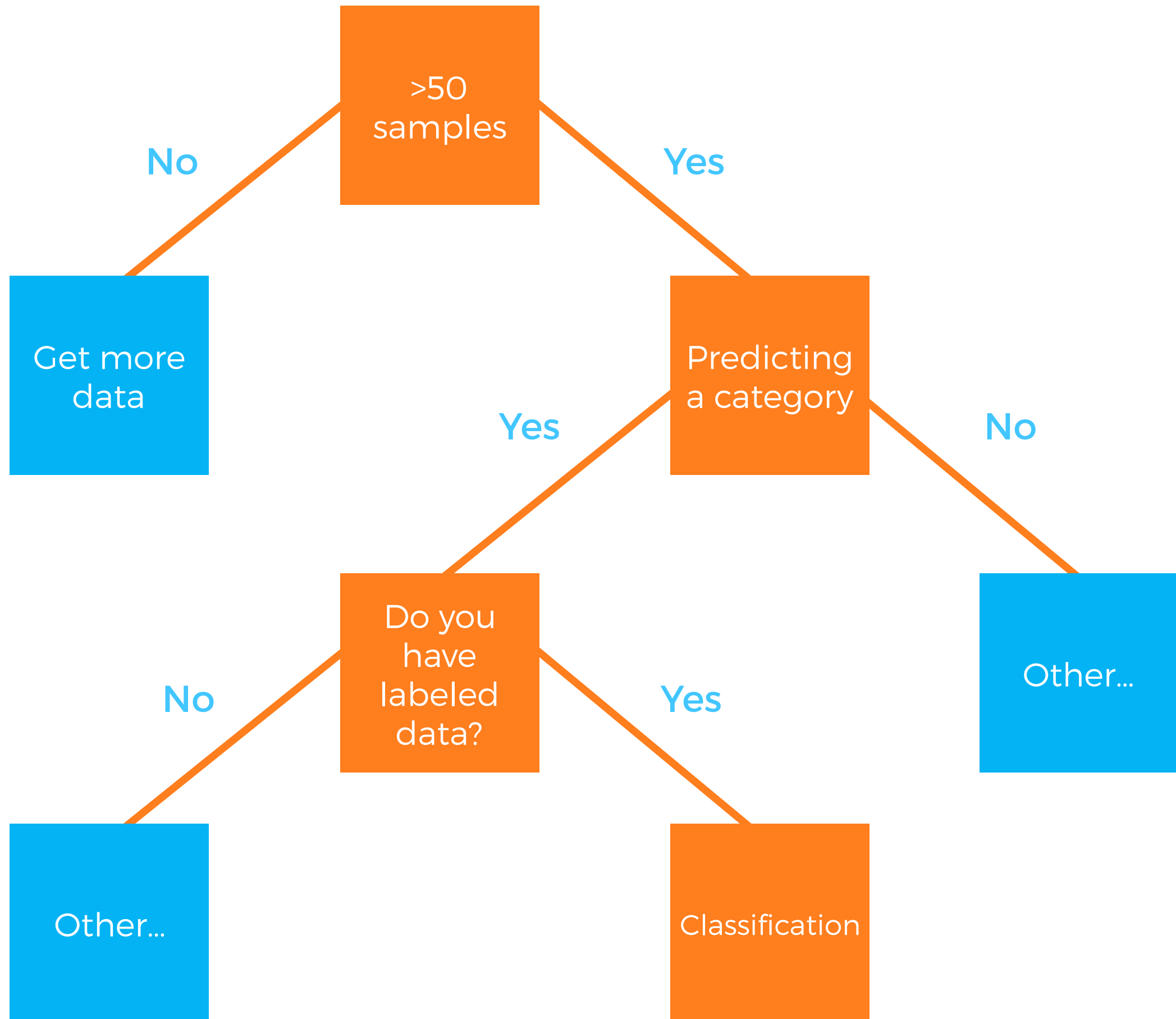
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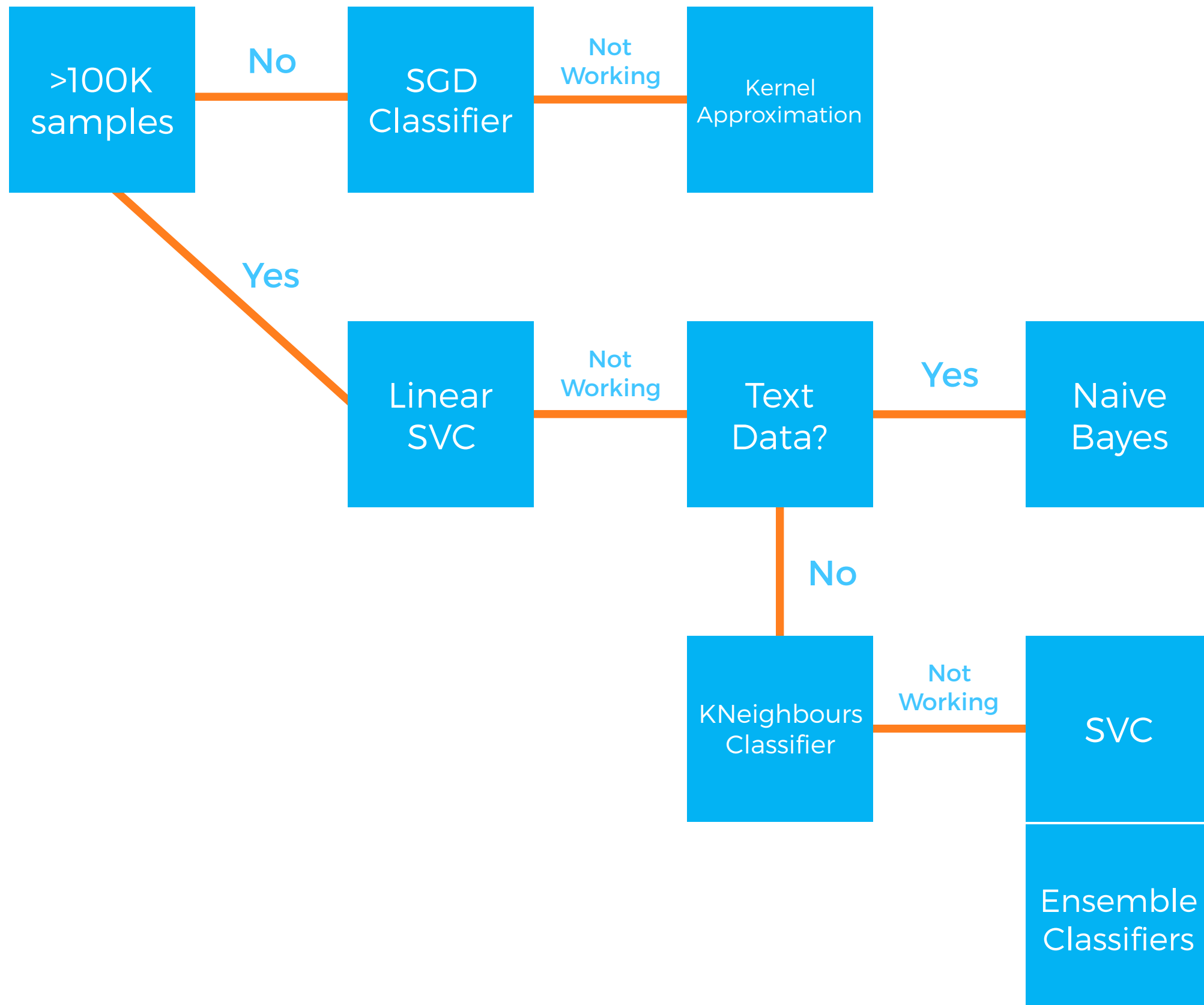


Machine Learning - Classification

When to use classification
algorithms?



Selecting the correct
classification algorithm

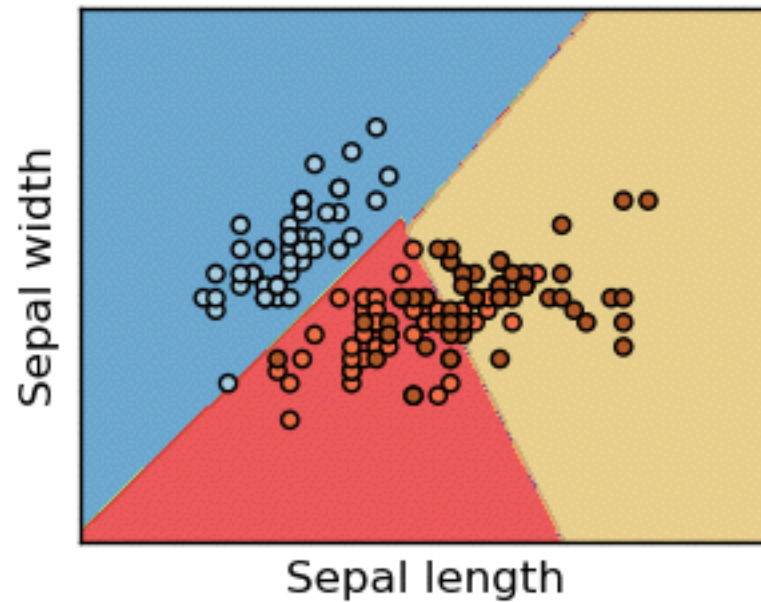


Linear SVC (Support Vector Machines)

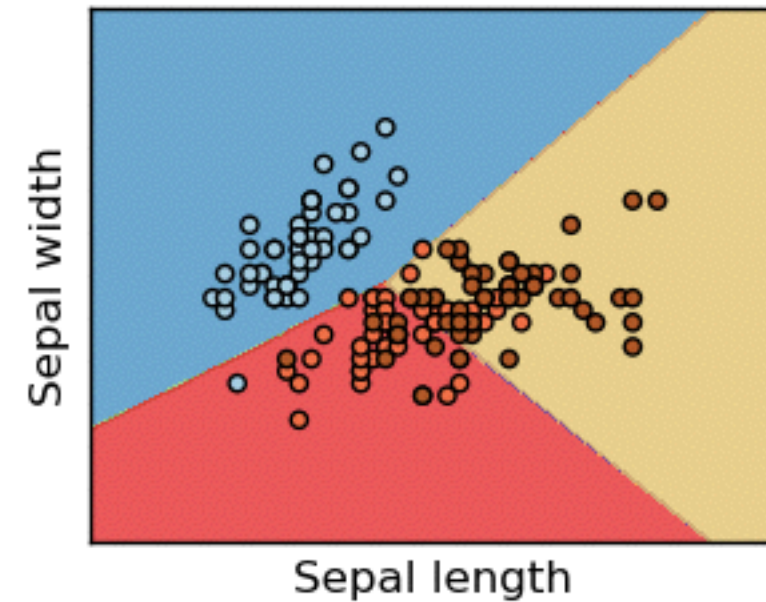
Support vector machines are a set of supervised learning methods used for **classification, regression and outliers detection.**

Linear SVC (Support Vector Machines)

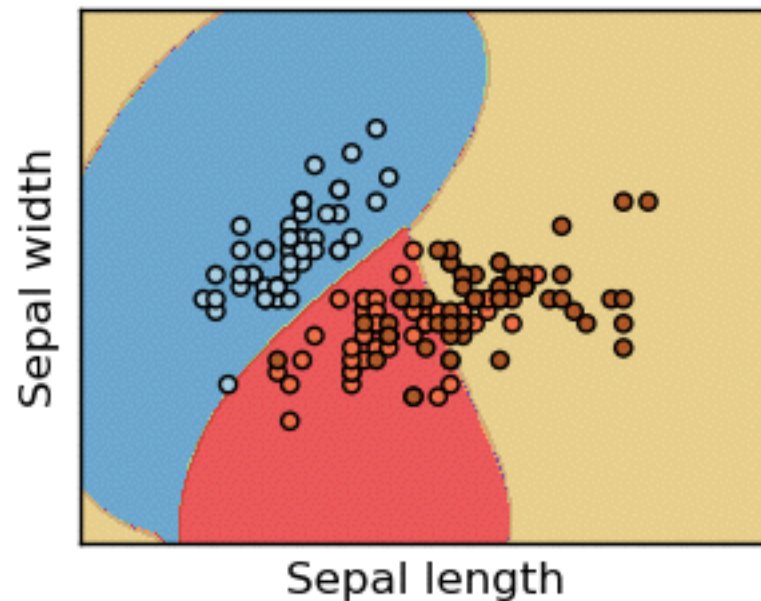
SVC with linear kernel



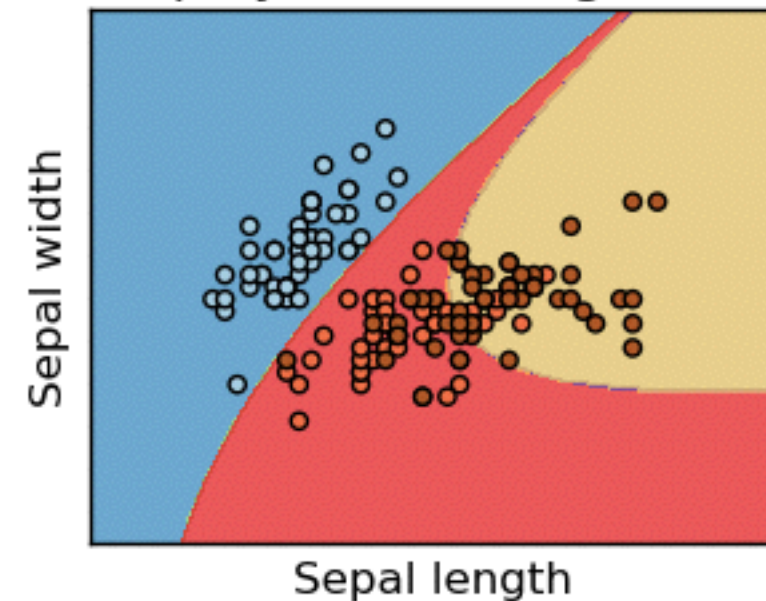
LinearSVC (linear kernel)



SVC with RBF kernel



SVC with polynomial (degree 3) kernel



Linear SVC (Support Vector Machines)

Advantages

- Effective in high dimensional spaces.
- Still effective in cases where number of dimensions is greater than the number of samples.
- Uses a subset of training points in the decision function (called support vectors), so it is also memory efficient.

Linear SVC (Support Vector Machines)

Disadvantages

- If the number of features is much greater than the number of samples, the method is likely to give poor performances.

Naive Bayes

A family of algorithms that all share a common principle, that **every feature being classified is independent** of the value of any other feature.

Naive Bayes

Example

A fruit may be considered to be an apple if it is red, round, and about 7cm in diameter.

A Naive Bayes classifier considers each of these “features” to contribute independently to the probability that the fruit is an apple, regardless of any correlations between features.

Naive Bayes

Advantages

- It's relatively simple to understand and build.
- It's easily trained, even with a small dataset.
- It's fast!
- It's not sensitive to irrelevant features.

Naive Bayes

Disadvantages

- It assumes every feature is independent, which isn't always the case.
- Although naive Bayes is known as a decent classifier, it is known to be a bad estimator, for this reason, probability outputs are not to be taken too seriously.

References

- Scikit-learn Classifier Documentation: <http://scikit-learn.org/stable/modules/classes.html>
- Scikit-learn Algorithms: <http://i.stack.imgur.com/BZJiN.png>
- Naive Bayes for Dummies: <http://blog.aylien.com/post/120703930533/naive-bayes-for-dummies-a-simple-explanation>



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Repo

<https://github.com/prolific-idea/Machine-Learning-for-Beginners/>

Dataset

<http://bit.ly/28LIPPr> or Ask us for the flash drive

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