**Emerging methods for early detection of forest fire**

TeamID:PNT2022TMID17141

PRIOR KNOWLEDGE

# Supervised learning:

Supervised machine learning requires labeled input and output

data

during the training phase of the machine learning life cycle. This training data is often labeled by a data scientist in the preparation phase, before being used to train and test the model. Once the model has learned the relationship between the input and output data, it can be used to classify new and unseen datasets and predict outcomes.

The reason it is called supervised machine learning is because at least

part of this approach requires human oversight. The vast majority of available data is unlabelled, raw data. Human interaction is generally required to

needed

accurately label data ready for supervised learning. Naturally, this can be a resource intensive process, as large arrays of accurately labeled training data is

# Unsupervised learning:

Unsupervised machine learning is the training of models on

raw and unlabelled training data. It is often used to identify patterns and trends in raw datasets, or to cluster similar data into a specific number of groups. It’s also often an approach used in the early exploratory phase to better understand the datasets.

Unsupervised machine learning is mainly used to:

* Cluster datasets on similarities between features or segment data Understand relationship between different data point such as automated music recommendations
* Perform initial data analysis

The main differences of supervised vs unsupervised learning include:

* unsupervised learning is generally used to understand relationships within datasets.
* Supervised machine learning is much more resource-intensive because of the need for labeled data.
* In unsupervised machine learning it can be more difficult to reach adequate levels of explainability because of less human oversight.