

THYROID PREDICTION

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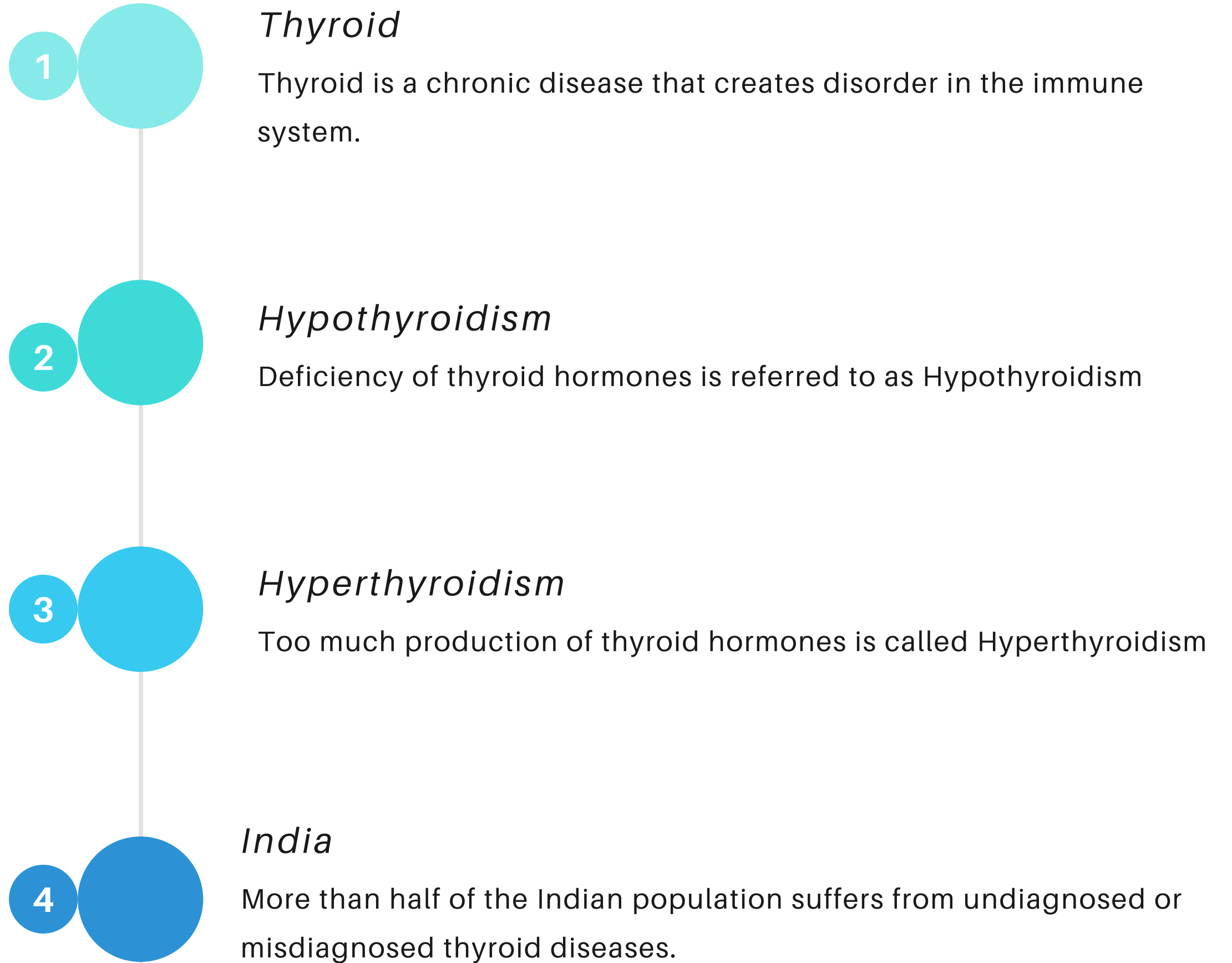
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Introduction



Machine Learning Techniques in Healthcare

Disease

1 in every 10 Indians
suffers from Thyroid

Research

Use of various
Machine Learning
Techniques
to predict Thyroid.

Benefits

This would help the
doctor in early
diagnosis and better
treatment of the
patients.

Exisiting Methods

01

Dataset Used

The research paper also used the thyroid dataset available on UCI repository.

02

Pre-processing

We do the necessary steps to deliver the result.

03

Feature Selection

They experimented with multiple set of features.

04

Tool Used

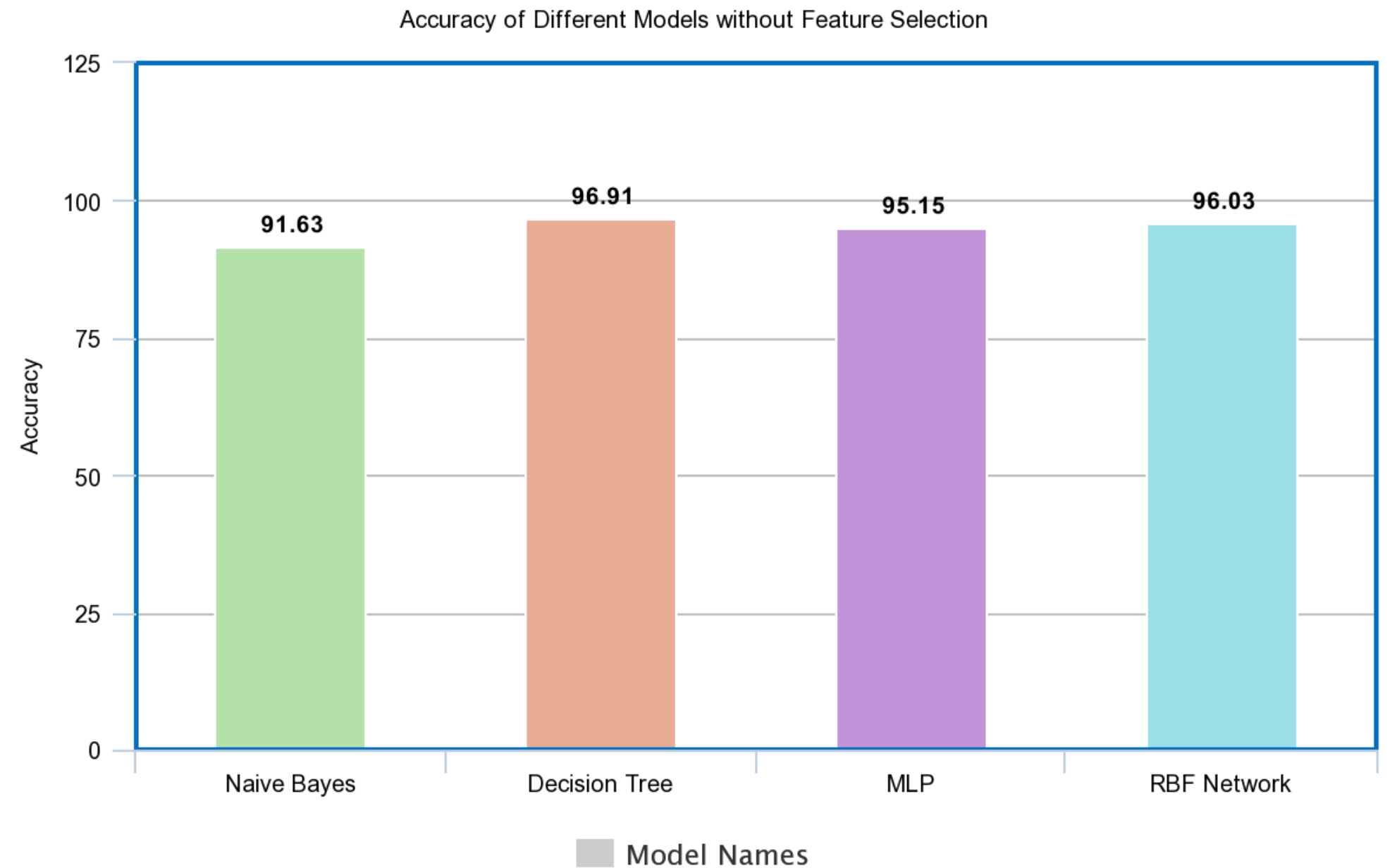
They did the analysis using KNIME Analytics Platform.

05

Models

They applied multiple models.
The results are discussed further.

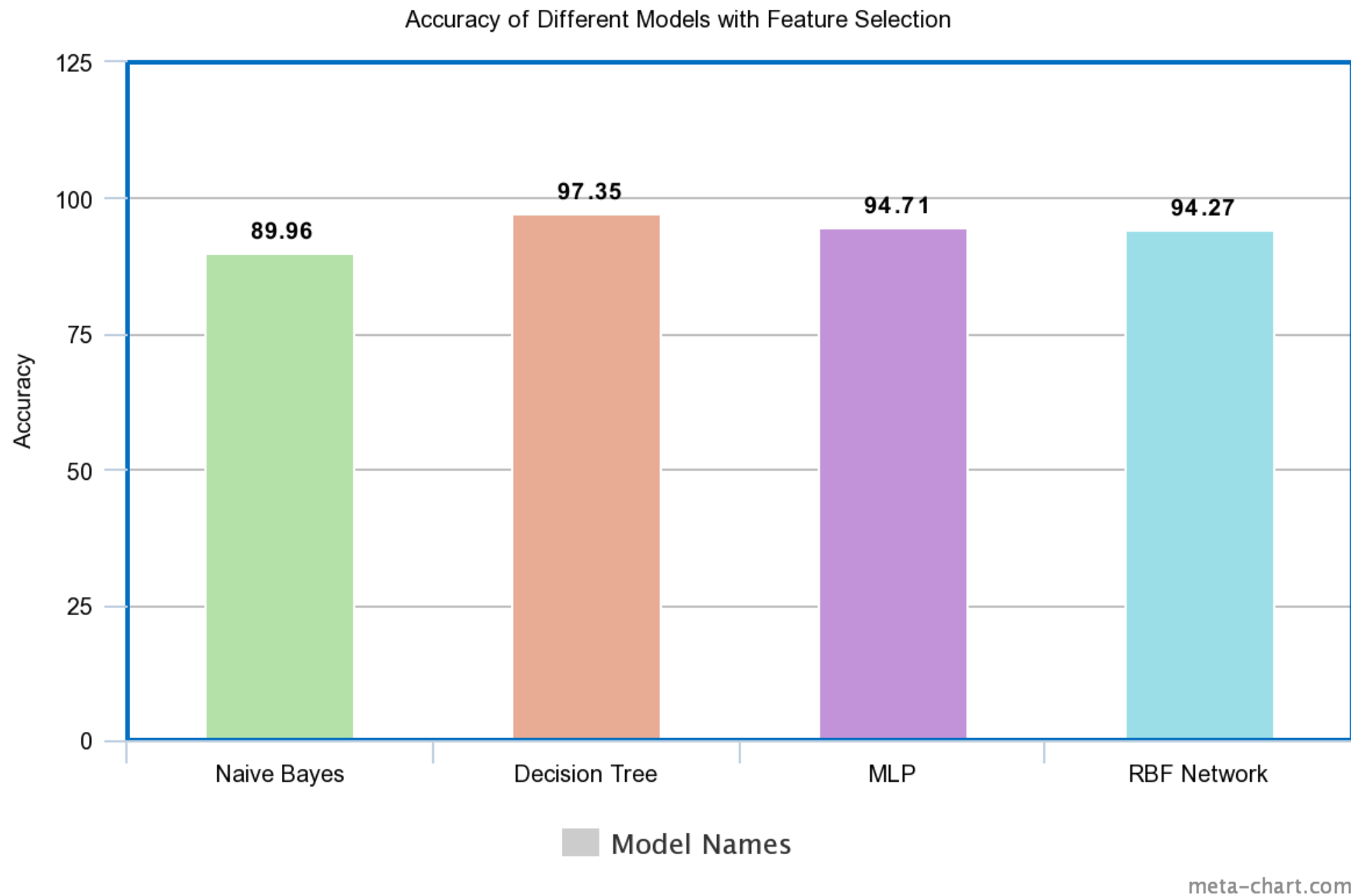
EXISTING RESULTS



meta-chart.com

This is the result obtained
when all the features are considered

EXISTING RESULTS



This is the result obtained
when 3 features are removed

DATASET USED



Source

We used the thyroid dataset available on the UCI repository

Data

The dataset contains training as well as testing dataset. The testing data is also labelled. The data was numerical. Categorical data was encoded.

Attributes

The dataset contains 22 attributes including the label.

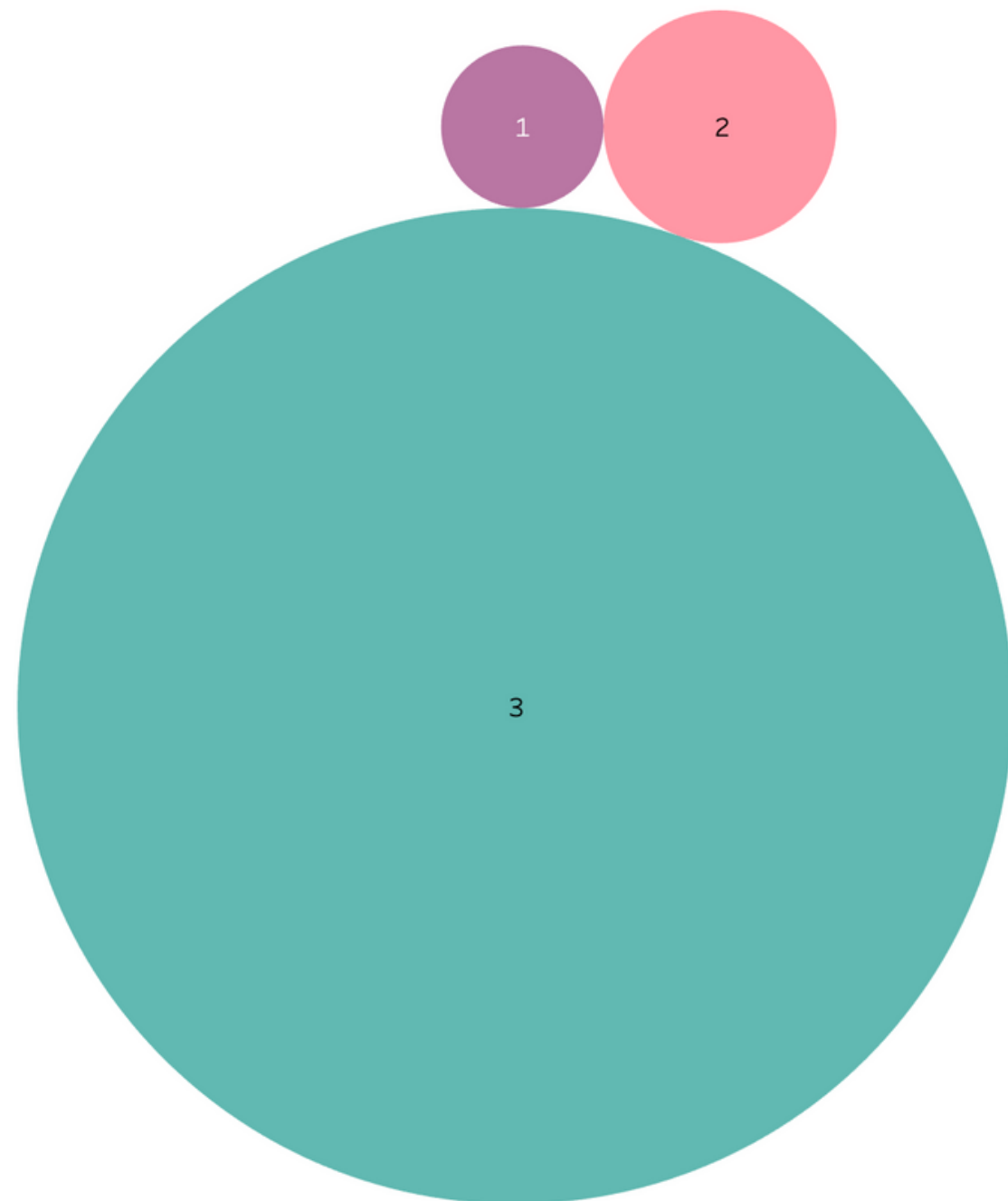
Classes

The data contains 3 class labels.

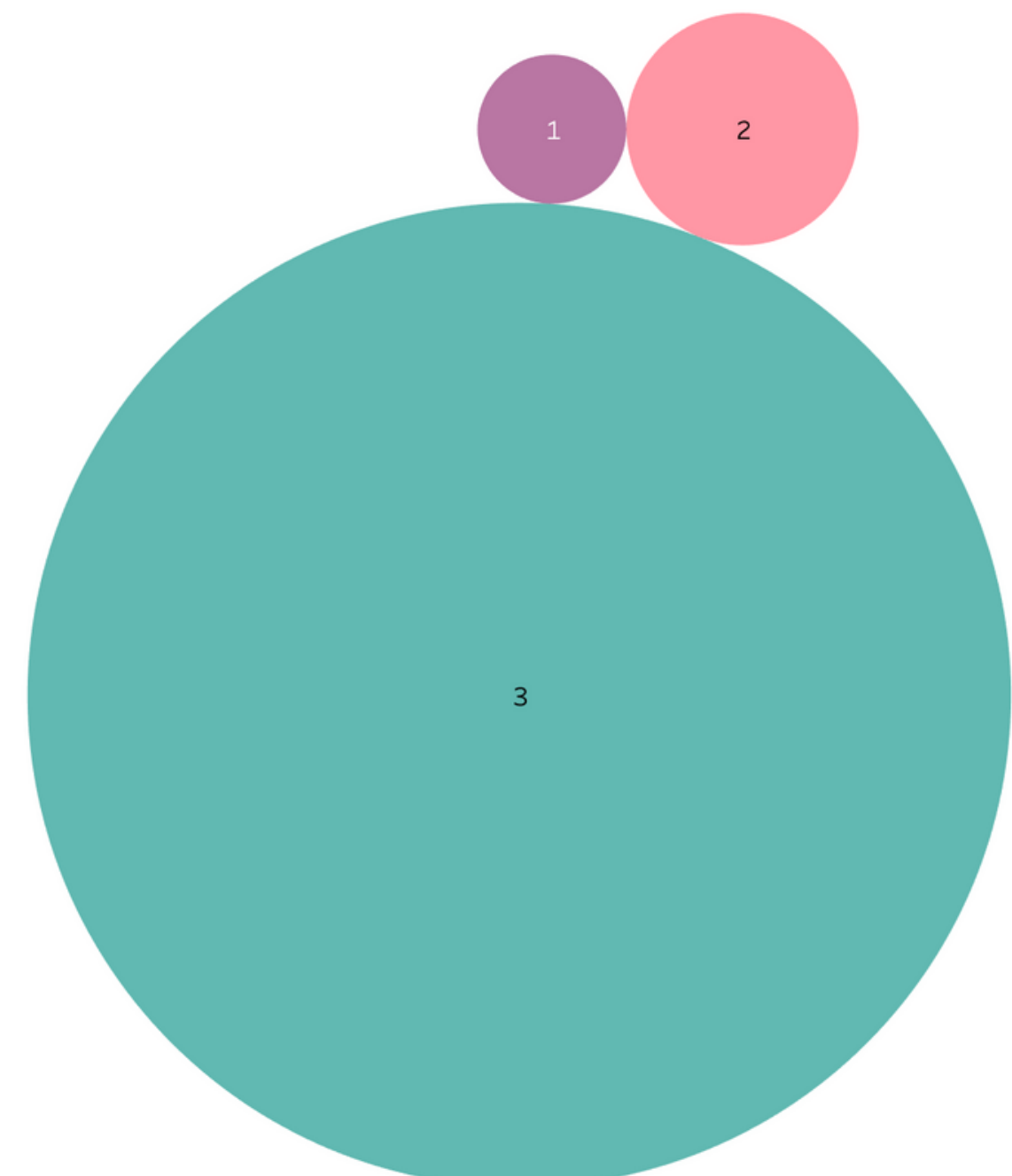
- 1- Normal
- 2-Hyperthyroidism
- 3-Hypothyroidism

CLASS DISTRIBUTION

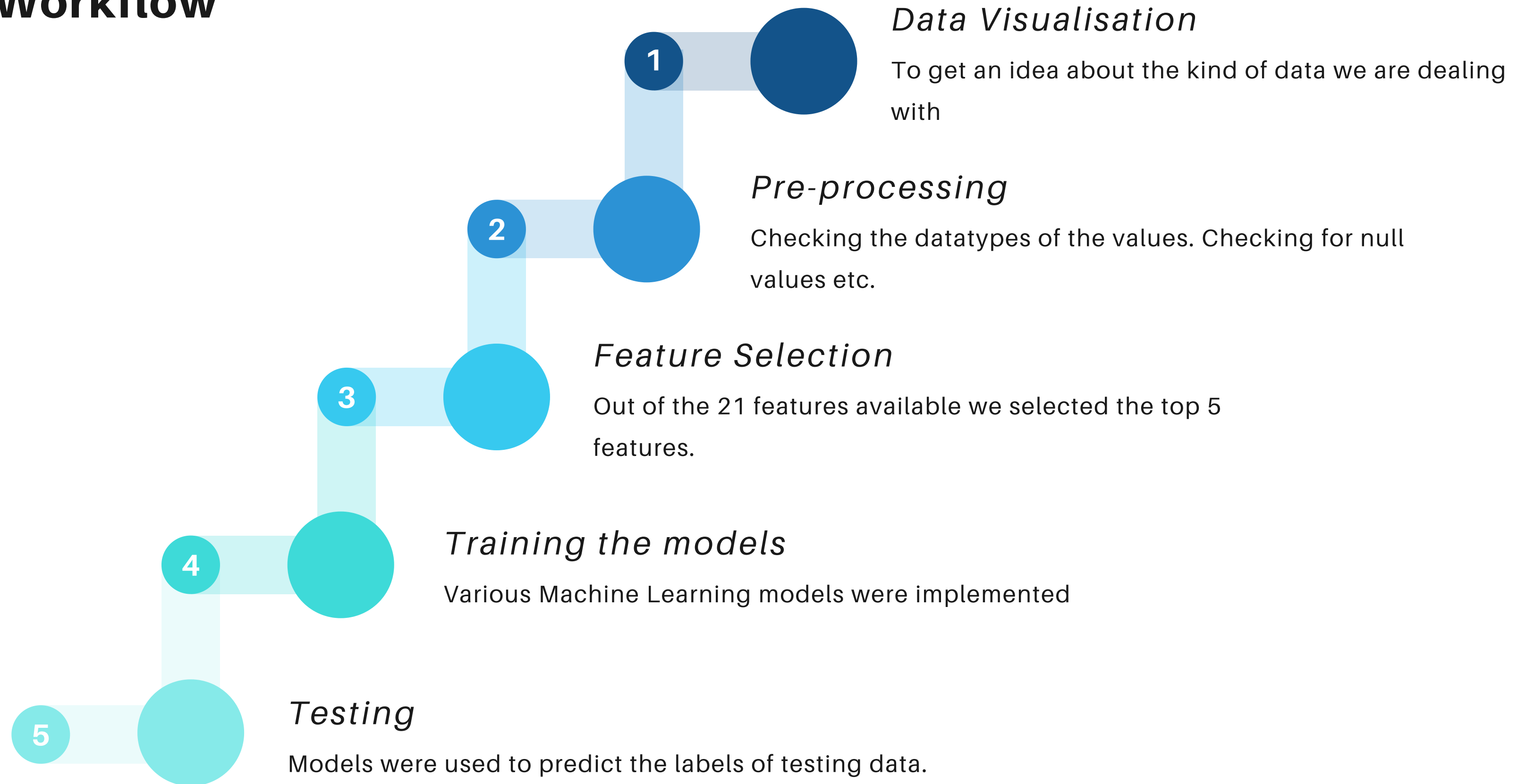
Training Data



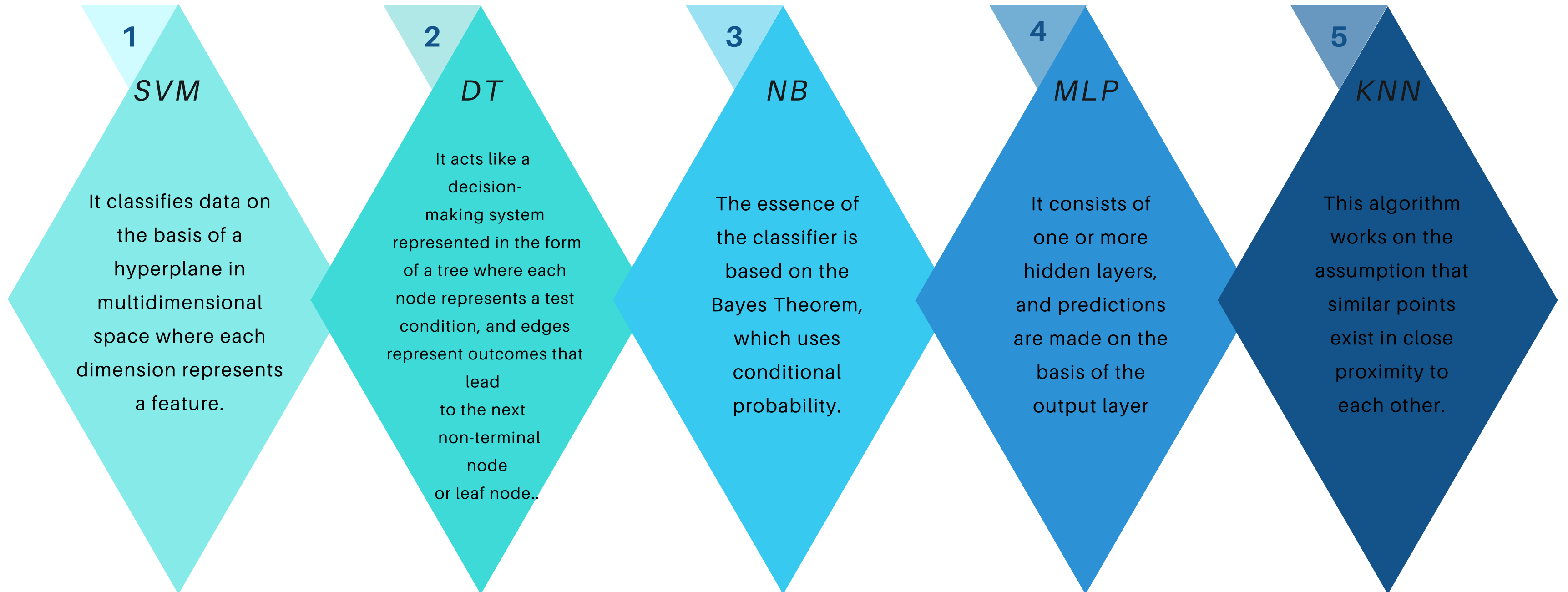
Testing Data



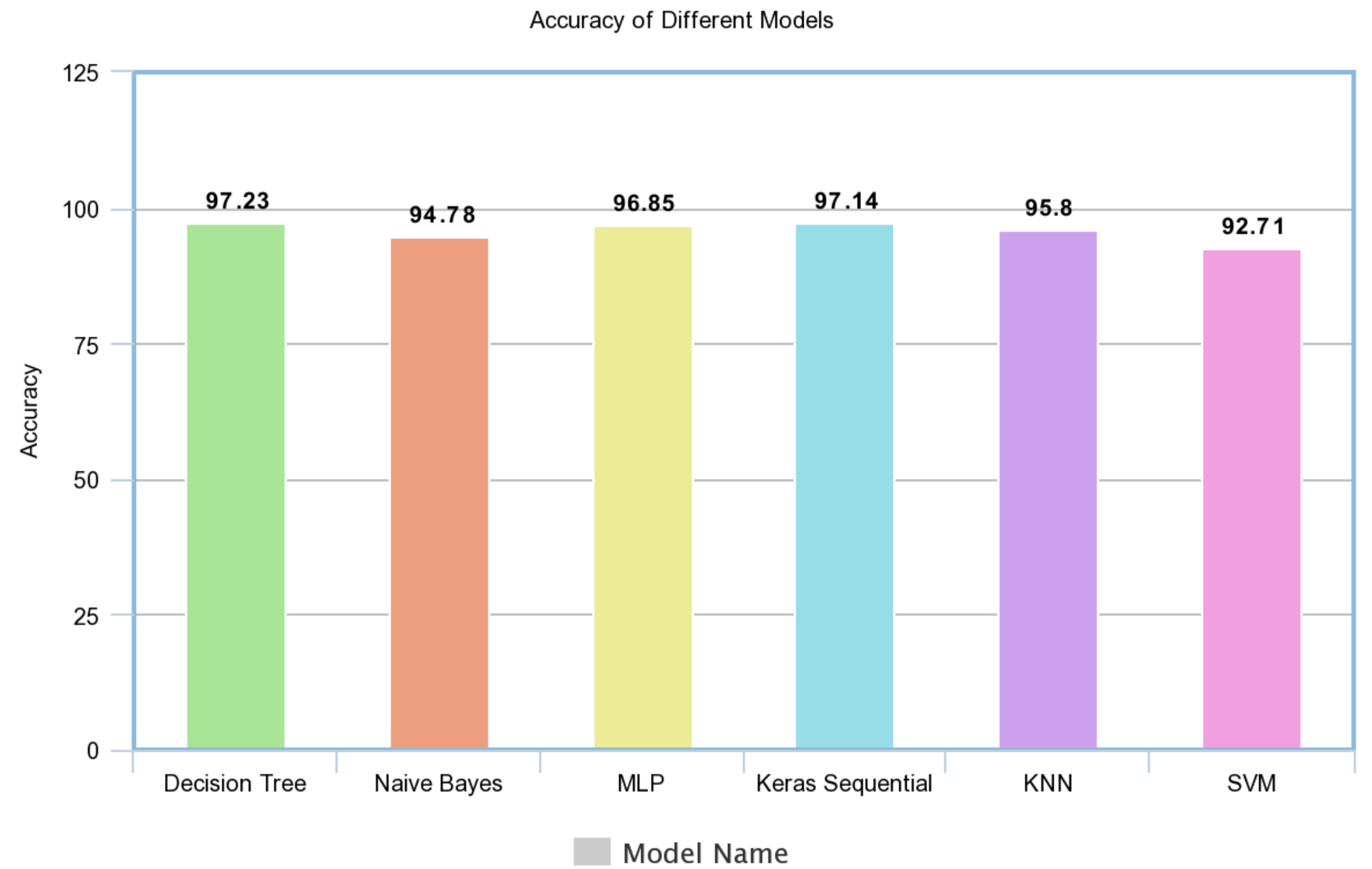
Workflow



Models Applied



Results



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ACCURACY OF DIFFERENT MODELS

1 in every 10 adults suffers from hypothyroidism in India.

Diagnosing the disease at the correct time is of utmost importance

[illegible]

Model used for prediction is Decision Tree

Accuracy of 97.22% is achieved

For predictions visit form using the menu

Visit [help](#) for more details

Thyroid Prediction Form

Refer help page for guidance.

T3 0.15

TT4 0.3

TSH 0.34

T4U 0.005

FTI 0.2

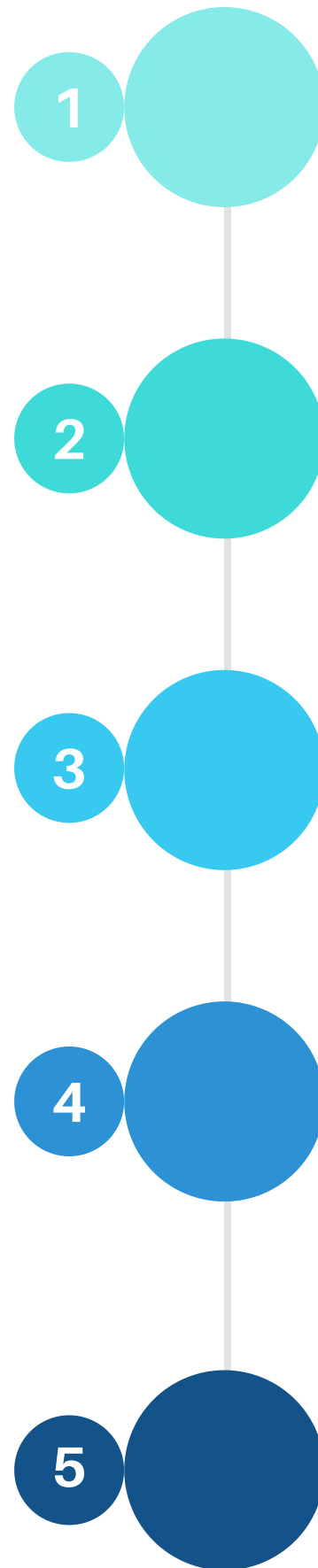
Submit

A web application to help predict if a person is suffering from thyroid or not

Improvement of Existing Methods

01	<i>Data Visualisation</i>	The base paper didn't perform any data visualisation.
02	<i>Pre- processing</i>	No pre-processing was done on the data in the base paper. We implemented normalization and feature selection.
03	<i>Models</i>	We tried to cover all the models of the paper along with some additional models.
04	<i>Results</i>	Because of the pre-processing steps we were able to get improved accuracy for all the models.
05	<i>Best Model</i>	The best model in our implementation as well as the base paper was Decision Tree. Our Model had a slightly more accuracy, with way less attributes..

Discussions and Conclusions



Till now

Different machine learning techniques along with the user interface for getting predictive result has been implemented

Result

The Decision Tree technique used along with the above-described feature selection and normalization techniques gives very much accurate predictions.

Benefits

This would definitely help medical practitioners in identifying thyroid patients and thus provide appropriate treatment.

Future Work 1

We can extend our web application by adding some important feature like recommending doctors and medicines for different type of thyroids

Future Work 2

We can also add some forms in which users can enter the symptoms and our system will be able to automatically recommend some exercise and home remedies.