Project 2

CHATBOT ML PROJECT

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DATA OVERVIEW

```
RangeIndex: 8175 entries, 0 to 8174
Data columns (total 4 columns):
 #   Column     Non-Null Count  Dtype
---  ------     --------------  -----
 0   flags      8175 non-null   object
 1   utterance  8175 non-null   object
 2   category   8175 non-null   object
 3   intent     8175 non-null   object
dtypes: object(4)
```

8175 Rows and 4 columns with no null values

DATA CLEANING AND PREPARATAION

```
I need to cancel my order.
          ↓
    cancel order
```

Creating a function to clean text and remove stop word from the sentences.

```
# Column
------
intent
processed_utterance
```

Creating a new column **processed_utterance** after cleaning the **utterance** column and removing all unnecessary columns from the dataset.

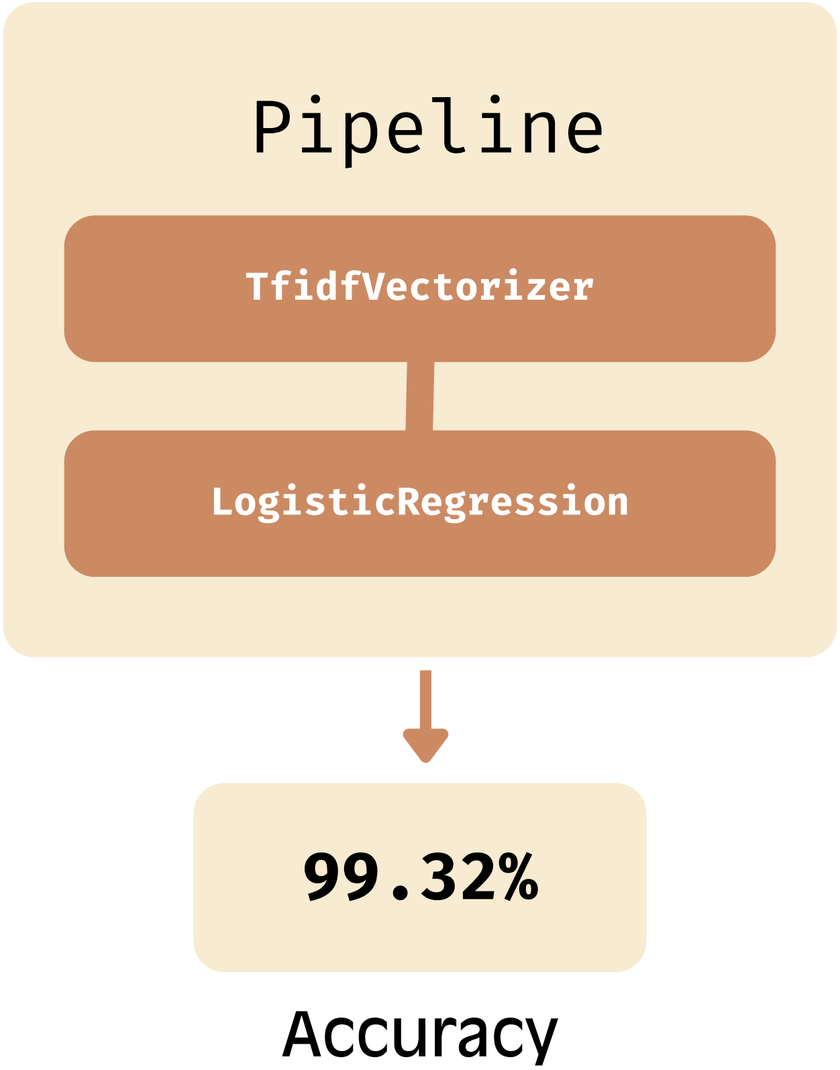
```
LabelEncoder() --> intent
```

Using Label Encoder to encode **intent** column

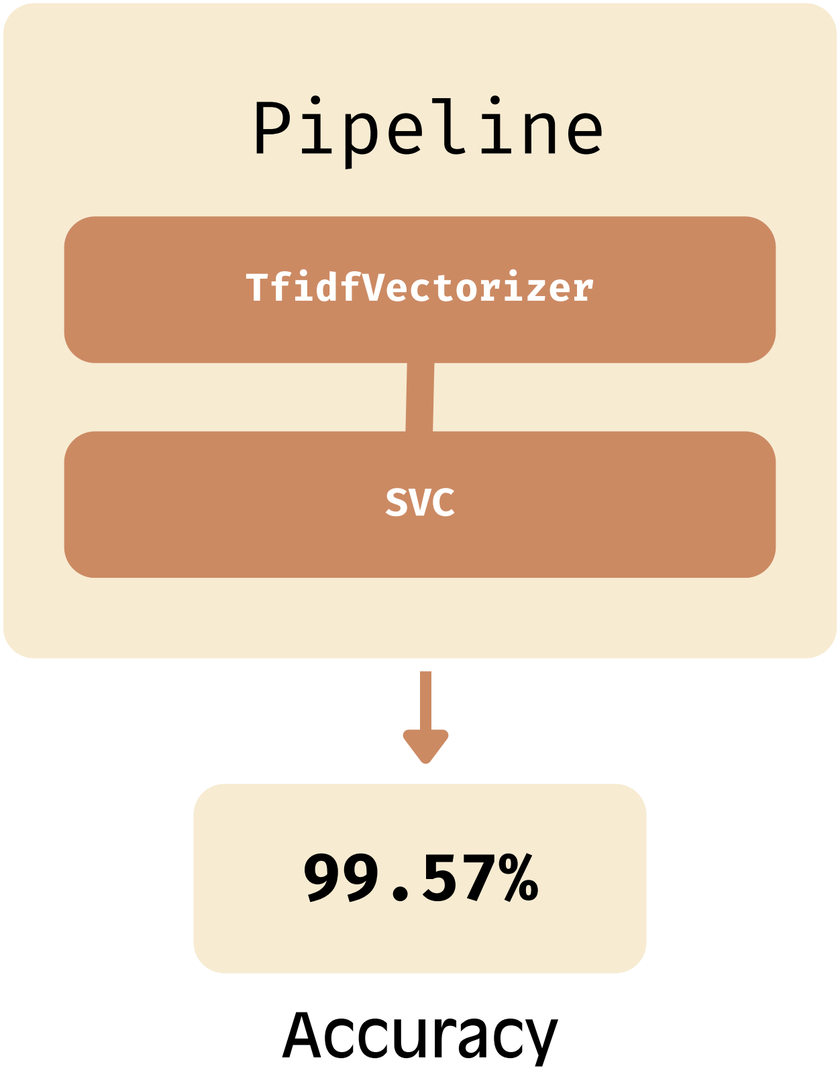
```
X_train | X_test
y_train | y_test
```

Creating training and testing datasets.

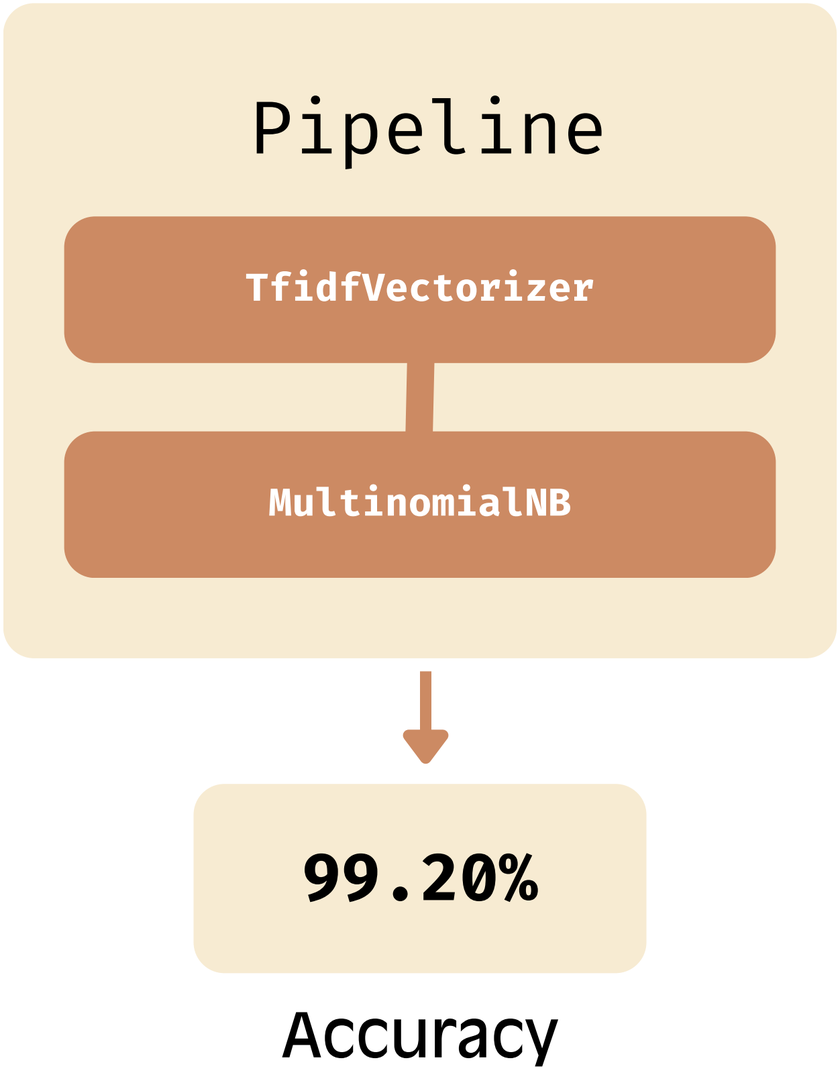
MODEL SELECTION LOGISTIC REGRESSION



MODEL SELECTION SVM CLASSIFIER

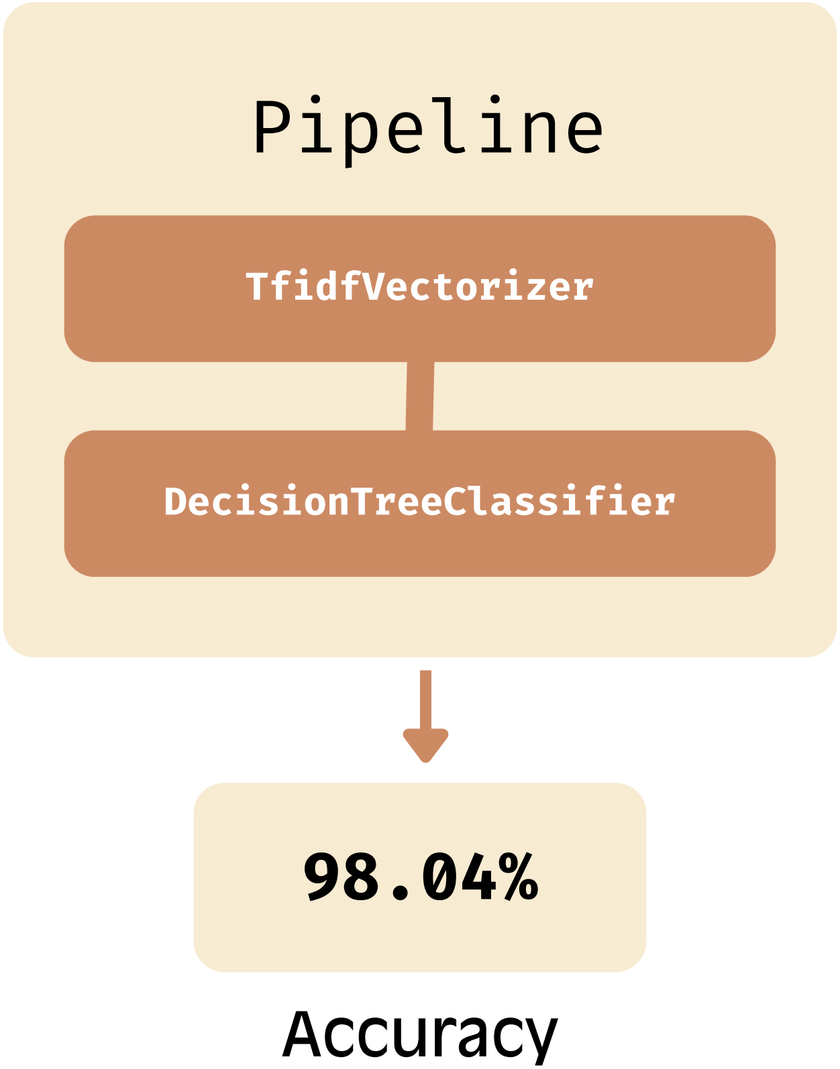


MODEL SELECTION NAIVE BAYES

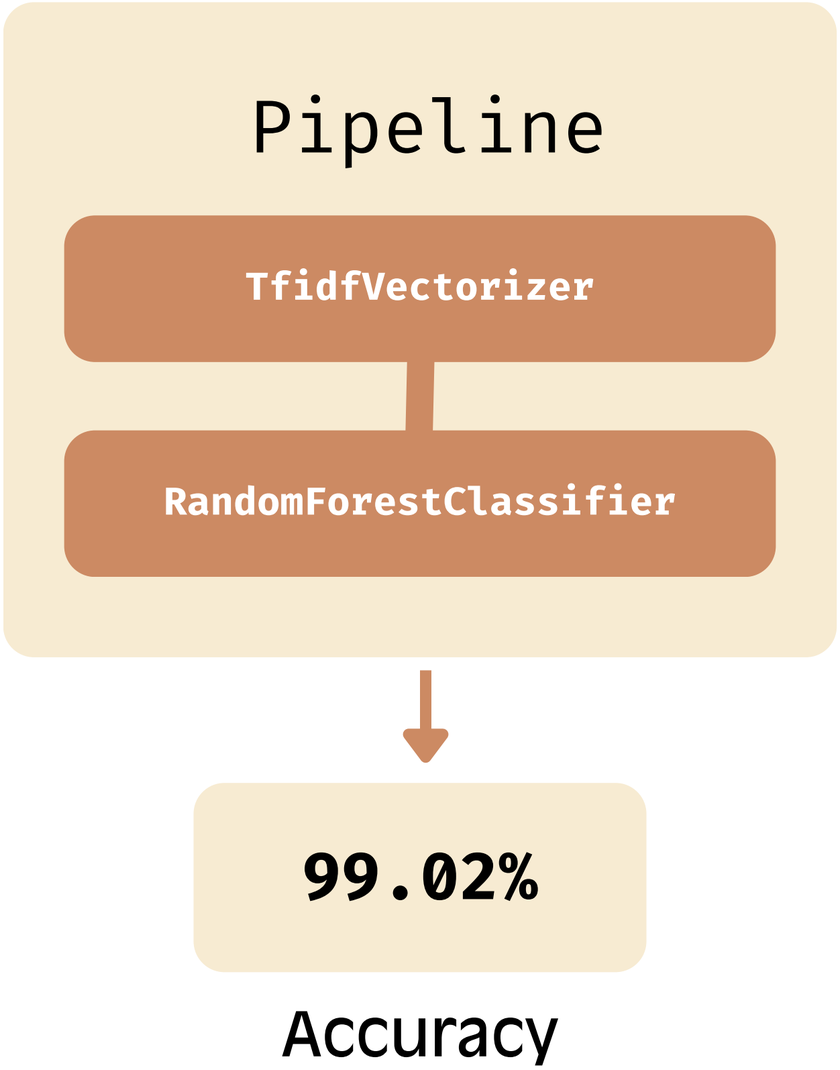


MODEL SELECTION

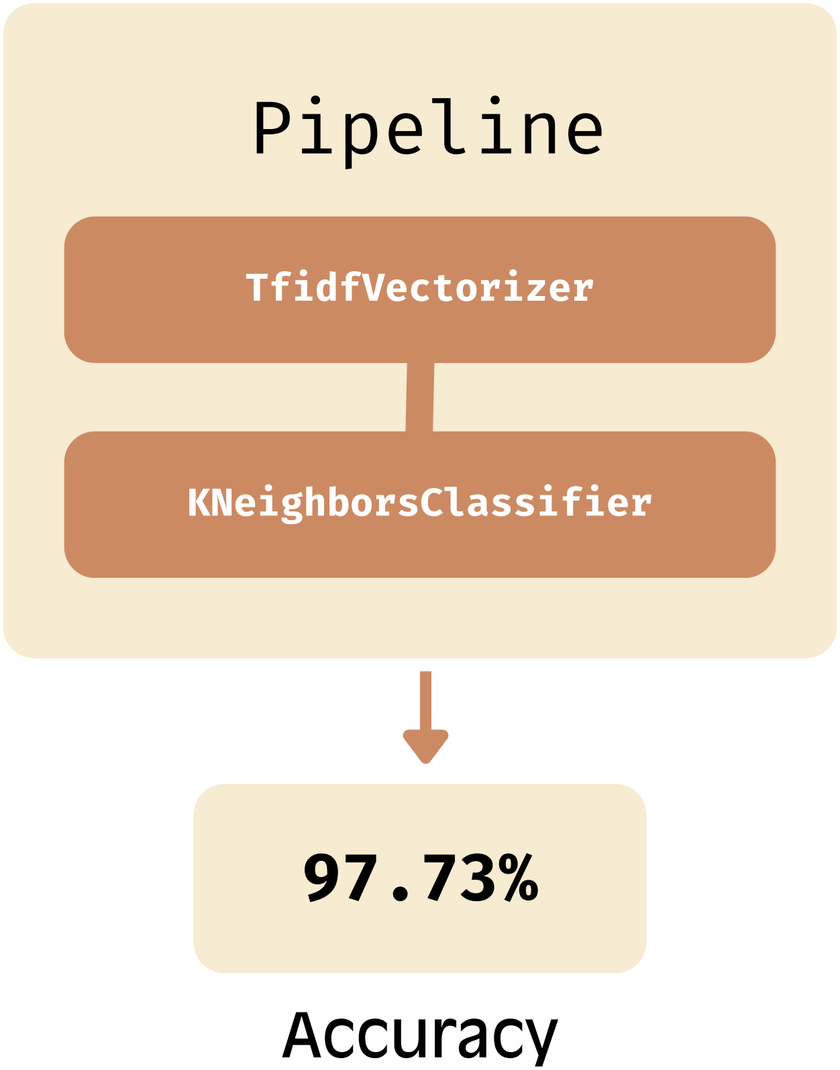
DECISION TREE CLASSIFIER



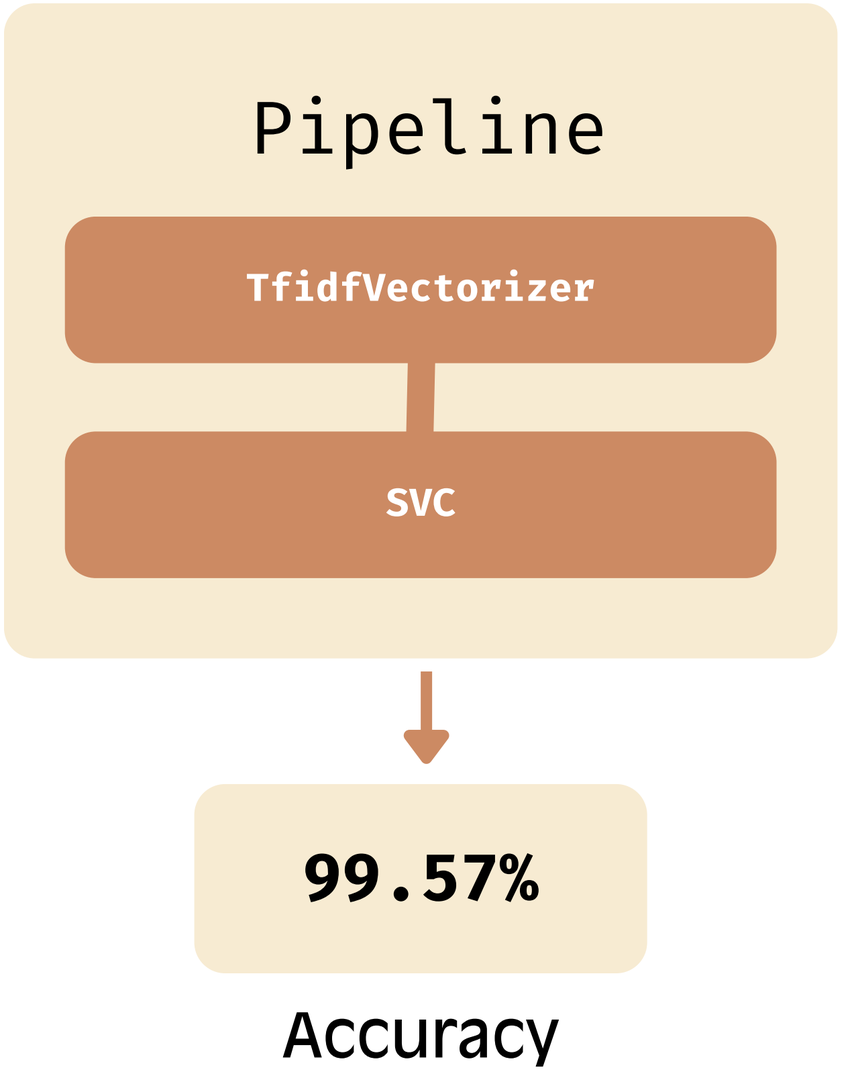
MODEL SELECTION RANDOM FOREST



MODEL SELECTION K NEAREST NEIGHBOR



MODEL SELECTION



Finalzing **SVM Classifier** for having the best accuracy i.e **99.57%** and classification report amongst the 6 models that were trained.

BUILDING CHATBOT API

`class ChatBot`	Template for the chatbot
`__init__()`	Constructor that will initialize the attributes when an object is made.
`responses`	A dictionary with base responses.
`concern`	An attribute which will temporarily store the active concern Ex. **cancel_order**
`entity`	An attribute which will temporarily store the active entity Ex. **orderId**
`extract_entities`	A method that will extract entity from a text.
`chatbot_response`	A method that will initiate a conversation and will provide responses based on user's input.

FINAL RESULT

```
You: Could you change my shipping address?
Bot: Please provide your new shipping address so I can update it.
Bot: Kindly provide me the details.
You: B34 Medows CHS
Bot: The job is done. Let me know if I can help you with something else.
```