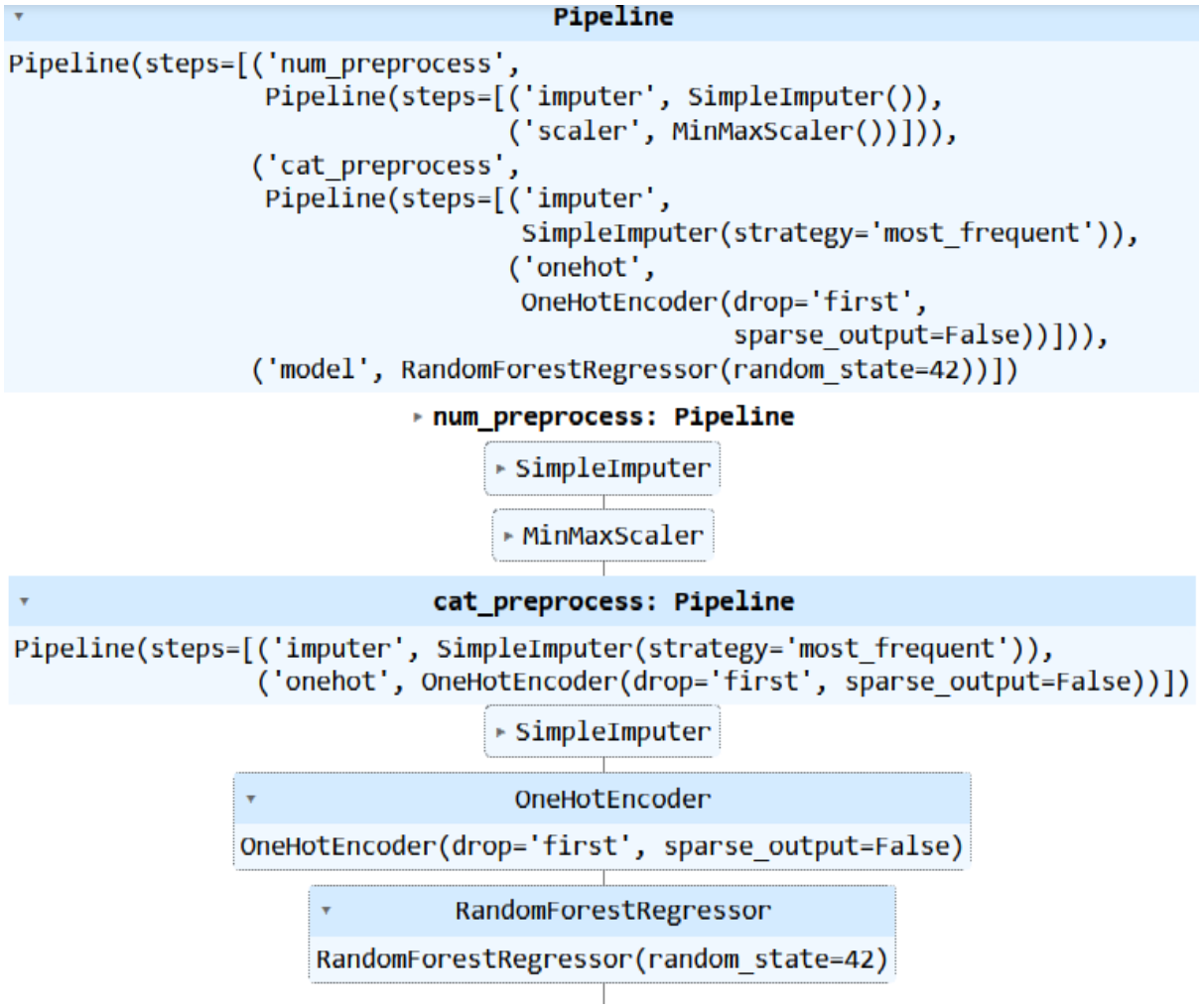
# Assignment – 2 Report

## Random Forest Regression

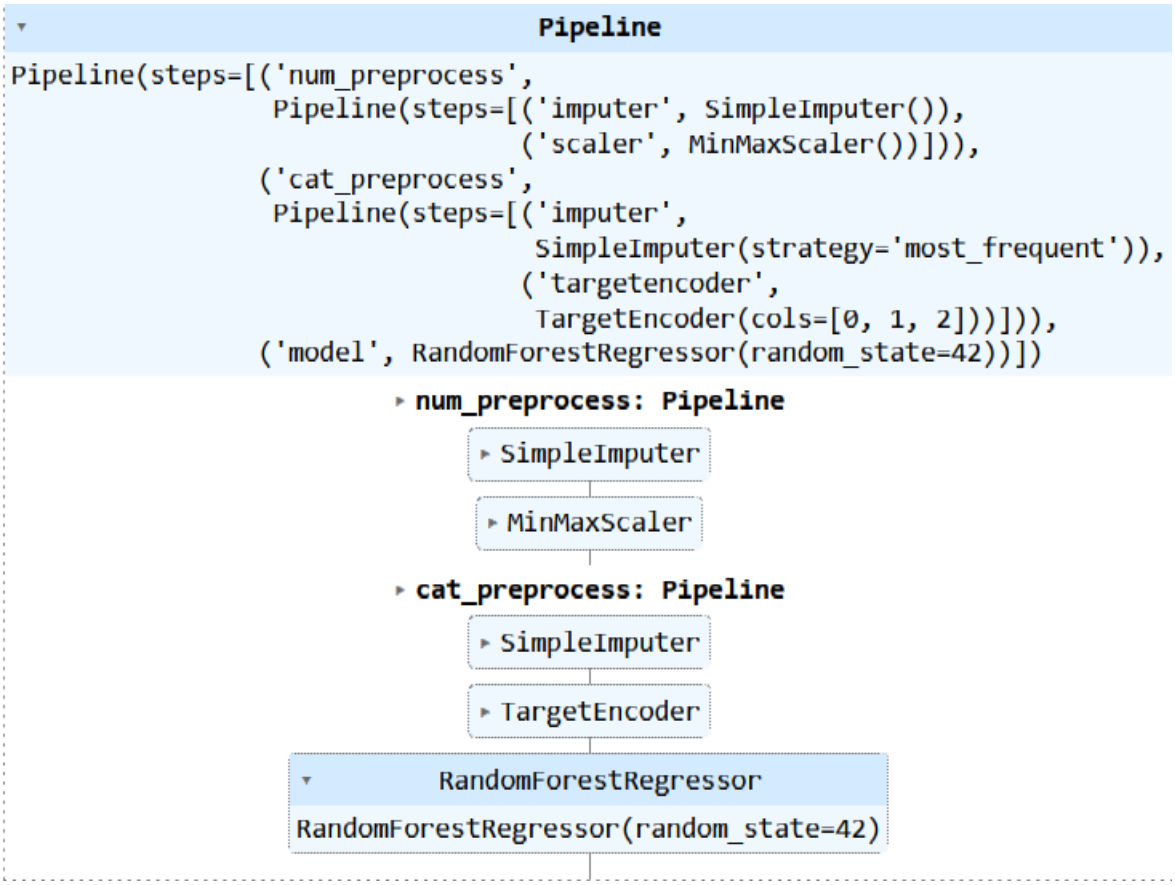
### 1.1. Using One-Hot Encoder:

- **Mean Squared Error (MSE):** 7.3914
- **R-squared:** 0.9998



### 1.2. Using Target Encoder:

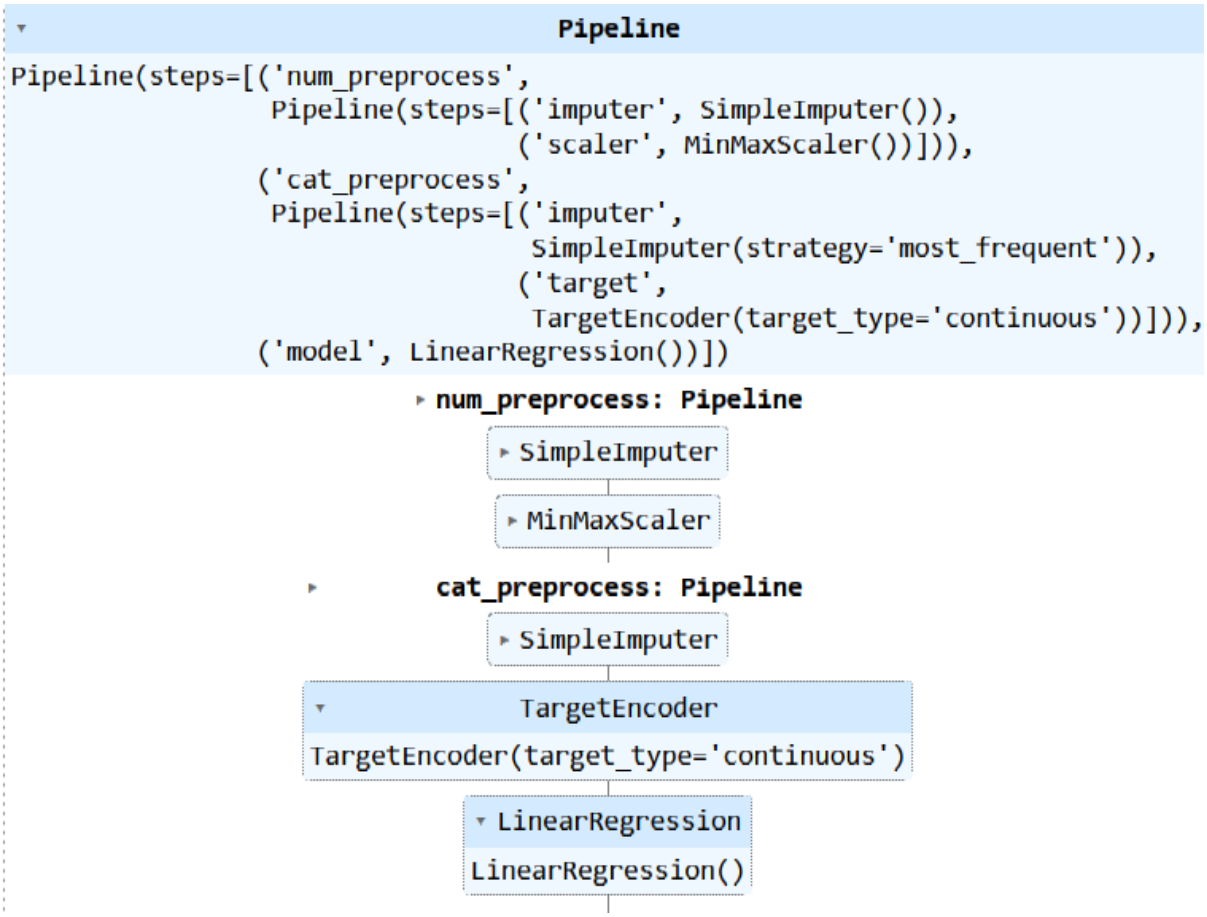
- **Mean Squared Error (MSE):** 7.5275
- **R-squared:** 0.9998



## 2. Linear Regression (Using Package)

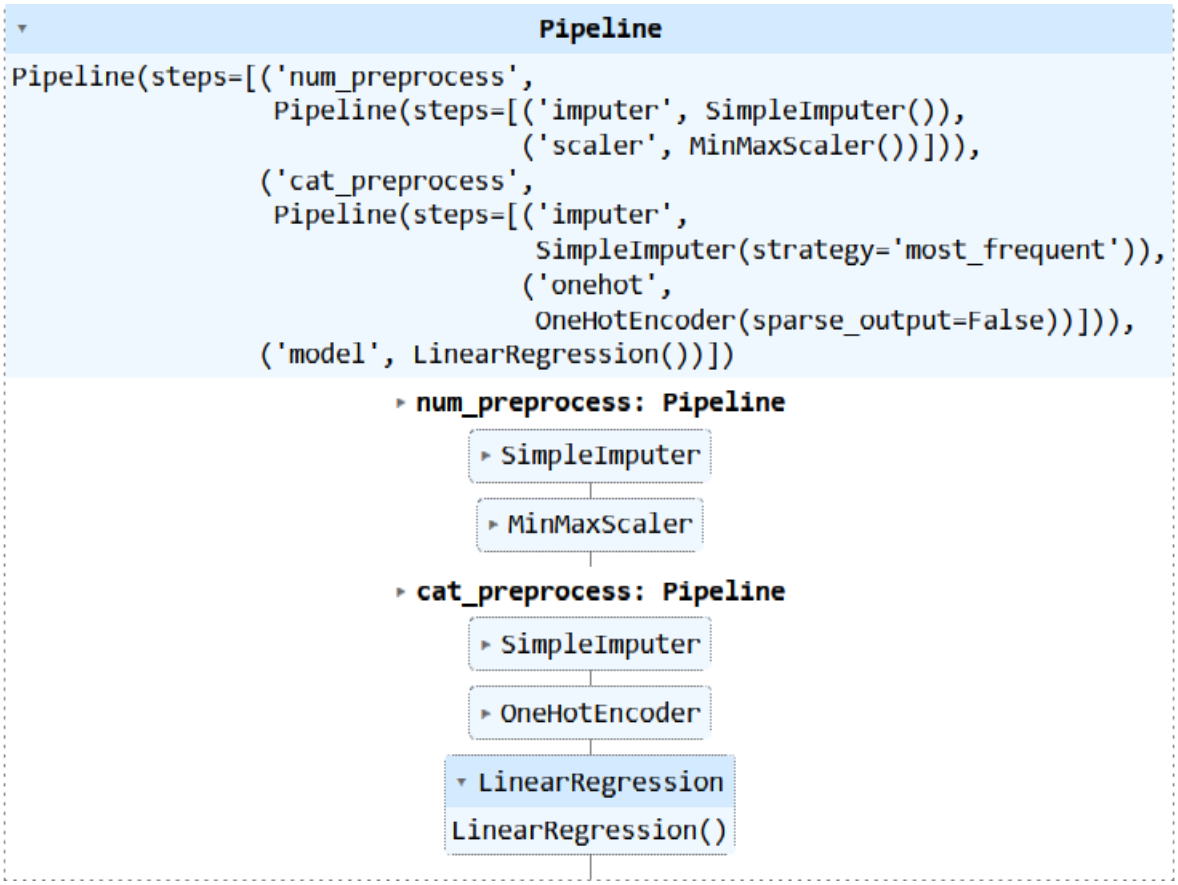
### 2.1. Using Target Encoder:

- **Mean Squared Error (MSE):** 15563.8545
- **R-squared:** 0.5085



## 2.2. Using One-Hot Encoder:

- **Mean Squared Error (MSE):** 15563.8545
- **R-squared:** 0.5085



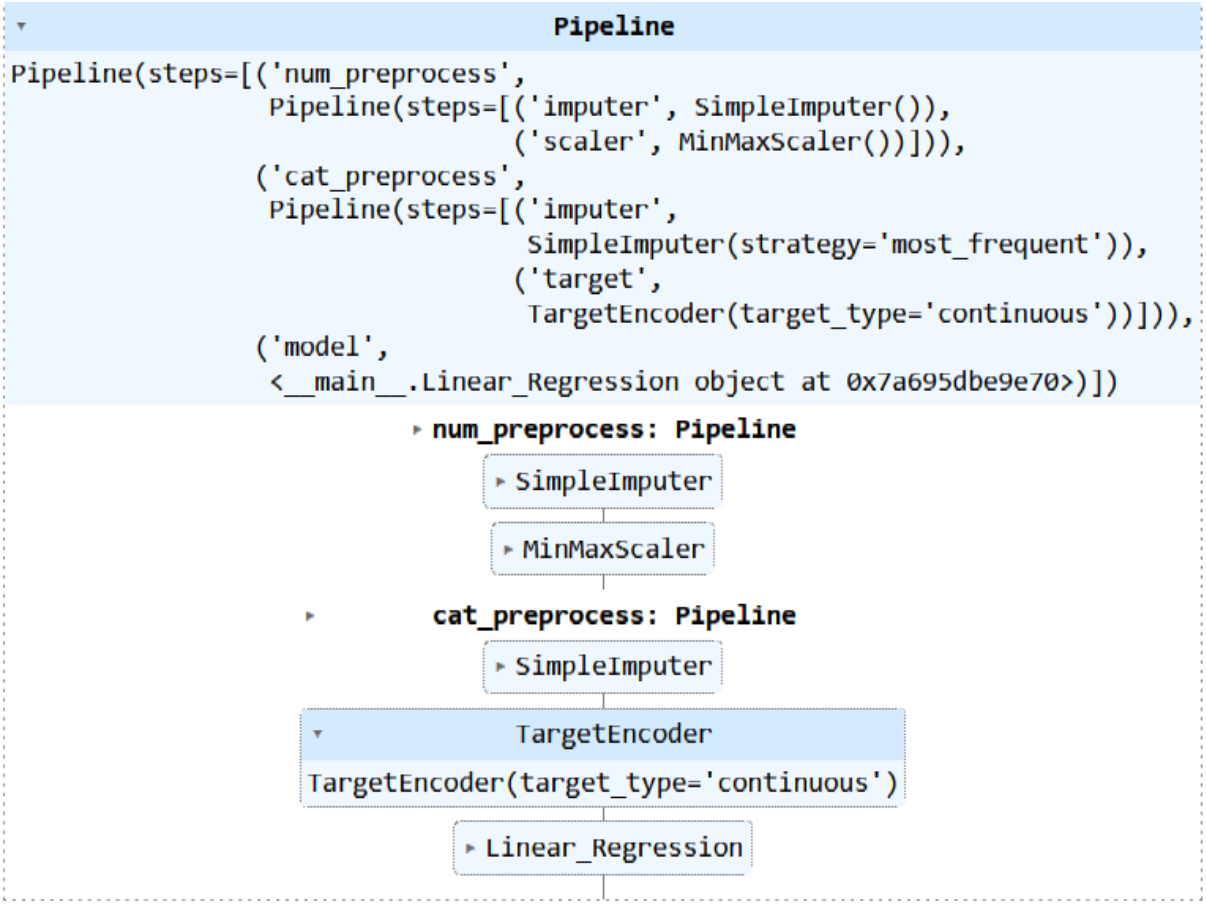
## 3. Linear Regression (From Scratch)

### 3.1. Using One-Hot Encoder:

- **Mean Squared Error (MSE):** 15563.8545
- **R-squared:** 0.5085

### 3.2. Using Target Encoder:

- **Mean Squared Error (MSE):** 16359.2324
- **R-squared:** 0.4834




For the Linear Regression, two numerical features have been added in-order to improve the performance of the model.

1. hum x temp

2. hum x windspeed

Humidity, temperature and windspeed are essential features in-order to predict the target values.

From the analysis, Random Forest Regressor has complete superiority over Linear Regressor.

For the given data, Random Forest is well suited for this.

On the other hand, Linear Regressor suffers due to complex data.