

Chapter 6

Result and Analysis

6.1. Classifier Comparison for Synthesized Data

Several algorithms were used to achieve the best classifier for the synthesized data of suitable stream prediction among which, Decision Tree Classifier provided an accuracy of **97.64** \pm **1.47%** in 10 fold cross validation.

Classifier	Accuracy	Standard Deviation
Random Forest	97.2%	1.47%
Logistic Regression	87.5%	3.74%
SVM (rbf)	86.4%	4.03%
SVM (Linear)	92.89%	1.94%
KNN	80.44%	5.24%
Decision Tree	97.64%	1.47%
GaussianNB	95.56%	2.43%

Table 1. Accuracy Comparison of Synthesized Dataset

	precision	recall	f1-score	support
0	1.00	1.00	1.00	20
1	1.00	1.00	1.00	11
2	1.00	0.88	0.93	8
3	0.96	1.00	0.98	24
4	1.00	1.00	1.00	13
5	1.00	1.00	1.00	74
accuracy			0.99	150
macro avg	0.99	0.98	0.99	150
weighted avg	0.99	0.99	0.99	150

Table 2. Analysis of Decision Tree Accuracy

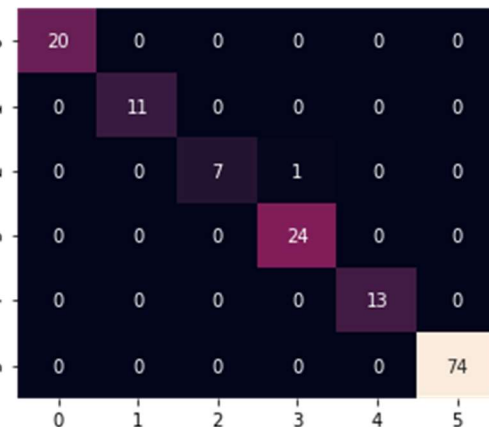


Fig 16. Classification Matrix

6.2. Classification Comparison for AMEO-2015

To predict the most suitable job profile and several other suggestions for a student, our proposed architecture uses Linear SVM for Hyper-parameter tuned values. The classifier led to 71.25 ± 4.19 % accuracy.

Classifier	Accuracy	Standard Deviation
Random Forest	65.55%	3.54%
Logistic Regression	65.34%	4.28%
SVM (rbf)	65.94%	3.60%
SVM (Linear)	65.35%	4.19%
KNN	64.73%	4.26%
Decision Tree	54.13%	6.09%
GaussianNB	57.33%	6.53%
XGBoost	62.33%	4.79%
Linear SVM with Tuning	71.25%	4.19%

Table 3. Accuracy Comparison of AMEO-2015 Dataset

	precision	recall	f1-score	support
0	0.74	0.98	0.84	119
1	0.25	0.08	0.12	12
2	0.00	0.00	0.00	2
3	0.80	0.12	0.21	34
accuracy			0.73	167
macro avg	0.45	0.30	0.29	167
weighted avg	0.71	0.73	0.65	167

Table 4. Analysis of Hyper-parameter Tuned Linear SVM Accuracy

6.3. API Connectivity and Regression Test

All REST APIs were tested using both **Postman** and **cURL**. For each API, two tests were performed. One with loopback IP (127.0.0.1) one with cloud deployment. Sample test cases are shown as below

```
// Stream:
{
  "p": "63",
  "c": "54",
  "m": "85",
  "com": "87",
  "ee": "207"
}
// Career:
{
  "10": "86.28",
  "12": "72",
  "sp": "14",
  "gpa": "9.04",
  "eng": "41.6667",
  "logical": "55.001",
  "quant": "49.444",
  "domain": "37.496",
  "prog": "-1.0",
  "conscientiousness": "0.7",
  "agreeableness": "0.79",
  "extraversion": "0.67",
  "nueroticism": "0.593"
}
```

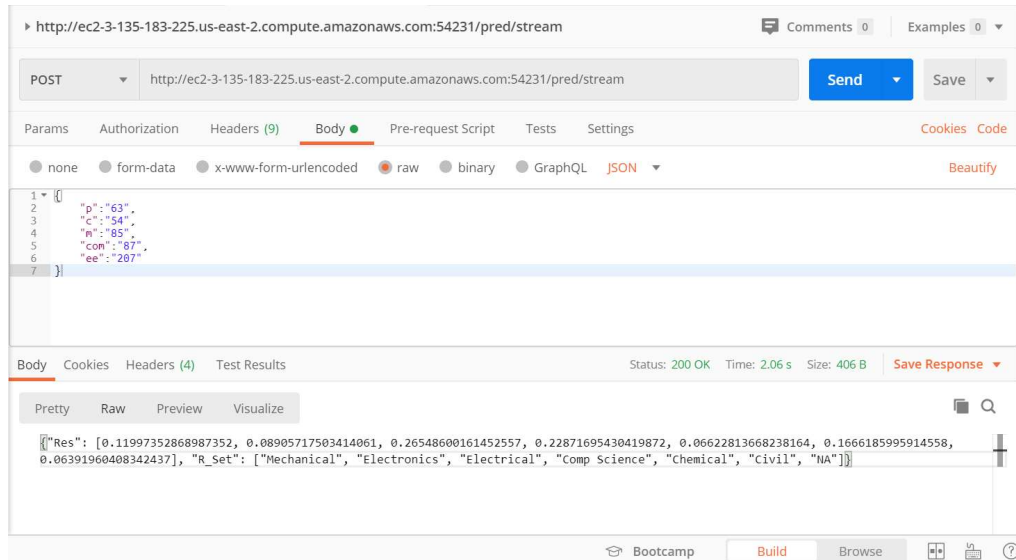


Fig 17. API Test with Postman

6.4. Deployment with Version Control and Beta Testing

The complete deployment is done with version control git and heroku toolbelt. The complete system was tested by all the team members and non-member technology enthusiasts. All remarks and suggestions were noted manually and most of the bugs are fixed accordingly.