**Project 4**

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**Phase 1 – User dependent Analysis**

**Steps:**

1. The new set of features that was obtained by multiplying the PCA output with the feature set in project 3 serves as input to project 4. There are two files: eating\_proj4\_input.csv and noneating\_proj4\_input.csv

2. We implemented splitdata(filename) which will divide 60% of the data as training data and 40% data as test data.

3. Machines namely Decision tree, SVM and Neural networks are trained using the train data. Then we provided test data and evaluated the performance of the machine using metrics such as precision, recall, f1score and ROC values. Implementation details as follows:

<placeholder>

Filename : proj4\_phase1.m

Input : eating\_proj4\_input.csv, noneating\_proj4\_input.csv

Output : See in below table

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Machines | Precision | Recall | F1score | ROC | |
| TPR | FPR |
| Decision Tree | 0.9691 | 0.8698 | 0.9167 | 97.2222 | 13.0208 |
| SVM | 0.8326 | 0.9931 | 0.9058 | 80.0347 | 0.69444 |
| Neural network | 0.9682 | 0.8993 | 0.9325 | 97.0486 | 10.0694 |

**Phase 2 – User Independent Analysis**

**Steps:**

<short description>

Filename : proj4\_phase2.m

Input : Copy all files from this [link](https://drive.google.com/open?id=1MnIbittnm1WlHu99PBeihcdfI8Wy8TU1) to the working directory

Output : See below

Decision Tree

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Team | Precision | Recall | F1score | ROC | |
| TPR | FPR |
| Team11 | 0.58075 | 0.24722 | 0.34681 | 82.153 | 75.278 |
| Team12 | 0.77543 | 0.40764 | 0.53437 | 88.194 | 59.236 |
| Team13 | 0.7694 | 0.24097 | 0.367 | 92.778 | 75.903 |
| Team14 | 0.87766 | 0.22917 | 0.36344 | 96.806 | 77.083 |
| Team15 | 0.83333 | 0.62153 | 0.71201 | 87.569 | 37.847 |
| Team16 | 0.48411 | 0.275 | 0.35075 | 70.694 | 72.5 |
| Team17 | 0.51587 | 0.27083 | 0.35519 | 74.583 | 72.917 |
| Team18 | 0.56863 | 0.24167 | 0.33918 | 81.667 | 75.833 |
| Team19 | 0.76471 | 0.25278 | 0.37996 | 92.222 | 74.722 |
| Team20 | 0.41242 | 0.17986 | 0.25048 | 74.375 | 82.014 |
| Team21 | 0.77377 | 0.32778 | 0.46049 | 90.417 | 67.222 |
| Team22 | 0.19048 | 0.030556 | 0.052663 | 87.014 | 96.944 |
| Team23 | 0.71201 | 0.34167 | 0.46176 | 86.181 | 65.833 |
| Team24 | 0.81836 | 0.58194 | 0.68019 | 87.083 | 41.806 |
| Team25 | 0.86364 | 0.34306 | 0.49105 | 94.583 | 65.694 |
| Team26 | 0.38287 | 0.10556 | 0.16549 | 82.986 | 89.444 |
| Team27 | 0.51469 | 0.32847 | 0.40102 | 69.028 | 67.153 |
| Team28 | 0.46076 | 0.28542 | 0.35249 | 66.597 | 71.458 |
| Team29 | 0.84416 | 0.36111 | 0.50584 | 93.333 | 63.889 |
| Team30 | 0.50539 | 0.22778 | 0.31403 | 77.708 | 77.222 |
| Team31 | 0.64228 | 0.16458 | 0.26202 | 90.833 | 83.542 |
| Team32 | 0.86977 | 0.50556 | 0.63944 | 92.431 | 49.444 |
| Team33 | 0.6793 | 0.62222 | 0.64951 | 70.625 | 37.778 |

SVM

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Team | Precision | Recall | F1score | ROC | |
| TPR | FPR |
| Team11 | 0.48784 | 0.93333 | 0.64076 | 2.0139 | 6.6667 |
| Team12 | 0.46785 | 0.87917 | 0.61071 | 0 | 12.083 |
| Team13 | 0.5 | 1 | 0.66667 | 0 | 0 |
| Team14 | 0.5 | 1 | 0.66667 | 0 | 0 |
| Team15 | 0.47674 | 0.91111 | 0.62595 | 0 | 8.8889 |
| Team16 | 0.50227 | 1 | 0.66868 | 0.90278 | 0 |
| Team17 | 0.46607 | 0.86806 | 0.6065 | 0.55556 | 13.194 |
| Team18 | 0.47636 | 0.90972 | 0.6253 | 0 | 9.0278 |
| Team19 | 0.47823 | 0.91528 | 0.62822 | 0.13889 | 8.4722 |
| Team20 | 0.4764 | 0.90417 | 0.62401 | 0.625 | 9.5833 |
| Team21 | 0.49983 | 0.99931 | 0.66636 | 0 | 0.069444 |
| Team22 | 0.5 | 1 | 0.66667 | 0 | 0 |
| Team23 | 0.48288 | 0.93056 | 0.63582 | 0.34722 | 6.9444 |
| Team24 | 0.49054 | 0.95417 | 0.64796 | 0.90278 | 4.5833 |
| Team25 | 0.49491 | 0.97986 | 0.65766 | 0 | 2.0139 |
| Team26 | 0.49433 | 0.96875 | 0.65462 | 0.90278 | 3.125 |
| Team27 | 0.48252 | 0.92986 | 0.63535 | 0.27778 | 7.0139 |
| Team28 | 0.48572 | 0.93333 | 0.63894 | 1.1806 | 6.6667 |
| Team29 | 0.46765 | 0.87847 | 0.61037 | 0 | 12.153 |
| Team30 | 0.4857 | 0.94375 | 0.64134 | 0.069444 | 5.625 |
| Team31 | 0.4883 | 0.94167 | 0.64311 | 1.3194 | 5.8333 |
| Team32 | 0.48033 | 0.92431 | 0.63215 | 0 | 7.5694 |
| Team33 | 0.50761 | 0.99583 | 0.67245 | 3.4028 | 0.41667 |

Neural network

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Team | Precision | Recall | F1score | ROC | |
| TPR | FPR |
| Team11 | 0.30399 | 0.38125 | 0.33826 | 12.708 | 61.875 |
| Team12 | 0.7419 | 0.93819 | 0.82858 | 67.361 | 6.1806 |
| Team13 | 0.511 | 0.35486 | 0.41885 | 66.042 | 64.514 |
| Team14 | 0.68863 | 0.9 | 0.78025 | 59.306 | 10 |
| Team15 | 0.77061 | 0.98681 | 0.86541 | 70.625 | 1.3194 |
| Team16 | 0.61858 | 0.86944 | 0.72286 | 46.389 | 13.056 |
| Team17 | 0.57913 | 0.93264 | 0.71455 | 32.222 | 6.7361 |
| Team18 | 0.32274 | 0.41597 | 0.36347 | 12.708 | 58.403 |
| Team19 | 0.62785 | 0.36319 | 0.46018 | 78.472 | 63.681 |
| Team20 | 0.36963 | 0.45972 | 0.40978 | 21.597 | 54.028 |
| Team21 | 0.34962 | 0.41736 | 0.3805 | 22.361 | 58.264 |
| Team22 | 0.18475 | 0.18681 | 0.18577 | 17.569 | 81.319 |
| Team23 | 0.48182 | 0.44167 | 0.46087 | 52.5 | 55.833 |
| Team24 | 0.7246 | 0.94097 | 0.81873 | 64.236 | 5.9028 |
| Team25 | 0.49913 | 0.4 | 0.4441 | 59.861 | 60 |
| Team26 | 0.6826 | 0.38681 | 0.49379 | 82.014 | 61.319 |
| Team27 | 0.50898 | 0.74792 | 0.60574 | 27.847 | 25.208 |
| Team28 | 0.5177 | 0.87361 | 0.65013 | 18.611 | 12.639 |
| Team29 | 0.65172 | 0.56528 | 0.60543 | 69.792 | 43.472 |
| Team30 | 0.555 | 0.99514 | 0.71258 | 20.208 | 0.48611 |
| Team31 | 0.52842 | 0.30347 | 0.38553 | 72.917 | 69.653 |
| Team32 | 0.75 | 0.96042 | 0.84227 | 67.986 | 3.9583 |
| Team33 | 0.52053 | 0.84514 | 0.64426 | 22.153 | 15.486 |