**Experiment report for Learning-based**

**Design Tradeoff Selection**

Experiment 1 – Original Distribution

Total OM: 14

Train OM : 14

Test OM 1 : 1 (Ecommerce)

Type: Test set is seen by the model.

Training Set:

Total Dataset Instances: 30970

Pareto Optimal (P) instances: 399

Pareto Optimal (NP) instances: 30571

Testing Set:

Total Dataset Instances: 105

Pareto Optimal (P) instances: 25

Pareto Optimal (NP) instances: 80

Notebook URL: [Experiment-1](https://github.com/rashedhasan090/OM-ML_Research/blob/main/Combined_datasets/14-OM-datasets/14-OM-seen/14_OM_Train_1_OM_Test(Ecommerce).ipynb)

Dataset URL: [Dataset-1](https://github.com/rashedhasan090/OM-ML_Research/blob/main/Combined_datasets/14-OM-datasets/14-OM-seen/14-OM.xlsx)

Testset URL: [Testset-1](https://github.com/rashedhasan090/OM-ML_Research/blob/main/Combined_datasets/14-OM-datasets/14-OM-seen/ecom.xlsx)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Precision | Recall | F1 | Support |
| 0 (NP) | 0.76 | 1.00 | 0.86 | 80 |
| 1 (P) | 0.00 | 0.00 | 0.00 | 25 |
| Accuracy |  | | 0.76 | 105 |
| Macro avg | 0.38 | 0.50 | 0.43 | 105 |
| Weighted avg | 0.58 | 0.76 | 0.66 | 105 |

Experiment 2 – Original Distribution

Total OM: 14

Train OM : 13

Test OM 1 : 1 (University)

Type: Test set is unseen by the model.

Training Set:

Total Dataset Instances: 30940

Pareto Optimal (P) instances: 389 P

Pareto Optimal (NP) instances: 30551 NP

Testing Set:

Total Dataset Instances: 31

Pareto Optimal (P) instances: 10

Pareto Optimal (NP) instances: 21

Notebook URL: [Notebook-2](https://github.com/rashedhasan090/OM-ML_Research/blob/main/Combined_datasets/14-OM-datasets/unseen/13-Om-train-1-OM(university)-test/13_OM_Train_1_OM_Test(University).ipynb)

Dataset URL: [Dataset-2](https://github.com/rashedhasan090/OM-ML_Research/blob/main/Combined_datasets/14-OM-datasets/unseen/13-Om-train-1-OM(university)-test/University_OM_test.xlsx)

Testset URL: [Testset-2](https://github.com/rashedhasan090/OM-ML_Research/blob/main/Combined_datasets/14-OM-datasets/unseen/13-Om-train-1-OM(university)-test/University_OM_test.xlsx)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Precision | Recall | F1 | Support |
| unknown or out-of-vocabulary (OOV) word in a text sequence.  All responses returned as UNK | | | | |

Experiment 3 – Original Distribution

Total OM: 14

Train OM : 12

Test OM 1 : 2 - University (Unseen) + Decider (Unseen)

Type: Test set is unseen by the model.

Training Set:

Total Dataset Instances: 30829

Pareto Optimal (P) instances: 377

Pareto Optimal (NP) instances: 30452

Testing Set:

Total instances - 111

Pareto Optimal (P) instances: 25

Pareto Optimal (NP) instances: 80

Notebook URL: [Experiment-3](https://github.com/rashedhasan090/OM-ML_Research/blob/main/Combined_datasets/14-OM-datasets/unseen/12-OM-train-3-OM(decider)-test/12_OM_Train_2_OM_Test(University%2BDecider).ipynb)

Dataset URL: [Dataset-3](https://github.com/rashedhasan090/OM-ML_Research/blob/main/Combined_datasets/14-OM-datasets/unseen/12-OM-train-3-OM(decider)-test/12-OM.xlsx)

Testset URL: [Testset-3](https://github.com/rashedhasan090/OM-ML_Research/blob/main/Combined_datasets/14-OM-datasets/unseen/12-OM-train-3-OM(decider)-test/2-OM-test-set.xlsx)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Precision | Recall | F1 | Support |
| 0 (NP) | 0.80 | 1.00 | 0.89 | 89 |
| 1 (P) | 0.00 | 0.00 | 0.00 | 22 |
| Accuracy |  | | 0.80 | 111 |
| Macro avg | 0.40 | 0.50 | 0.45 | 111 |
| Weighted avg | 0.64 | 0.80 | 0.71 | 111 |

Experiment 4 – Original Distribution

Total OM: 14

Train OM : 10

Test OM : 4 (Ecommerce)

Type: Test set is unseen by the model.

Total Dataset Instances: 30701

Training Set:

Pareto Optimal (P) instances: 367

Pareto Optimal (NP) instances: 30334

Testing Set:

Total Dataset Instances: 127

Pareto Optimal (P) instances: 32

Pareto Optimal (NP) instances: 95

Notebook URL:

Dataset URL:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Precision | Recall | F1 | Support |
| 0 (NP) | 0.75 | 1.00 | 0.86 | 95 |
| 1 (P) | 0.00 | 0.00 | 0.00 | 32 |
| Accuracy |  | | 0.75 | 127 |
| Macro avg | 0.37 | 0.50 | 0.43 | 127 |
| Weighted avg | 0.56 | 0.75 | 0.64 | 127 |

Experiment 5 – Sampling Distribution

P (30%) – NP (70%)

Total OM: 14

Train OM : 13

Test OM : 1 (University OM)

Type: Test set is unseen by the model.

Total Dataset Instances: 30970

Training Set:

Pareto Optimal (P) instances: 9140

Pareto Optimal (NP) instances: 21328

Testing Set:

Pareto Optimal (P) instances: 10

Pareto Optimal (NP) instances: 21

Notebook URL: [Notebook-5](https://github.com/rashedhasan090/OM-ML_Research/blob/main/Combined_datasets/14-OM-datasets/P_labels_oversample_30%25_total_dataset/13_OM_30/13_OM_Train_1_OM_Test(University)_30%20(1).ipynb)

Dataset URL: [Dataset-5](https://github.com/rashedhasan090/OM-ML_Research/blob/main/Combined_datasets/14-OM-datasets/P_labels_oversample_30%25_total_dataset/13_OM_30/13_OM_30.xlsx)

Testset URL: [Testset-5](https://github.com/rashedhasan090/OM-ML_Research/blob/main/Combined_datasets/14-OM-datasets/P_labels_oversample_30%25_total_dataset/13_OM_30/University_OM_test.xlsx)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Precision | Recall | F1 | Support |
| unknown or out-of-vocabulary (OOV) word in a text sequence.  All responses returned as UNK | | | | |