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Faculty of Computers and Artificial Intelligence

Computer Science Department

2021/2022

**CS 395 Selected Topics in CS-1**

**Research Project**

Report Submitted for Fulfillment of the Requirements and ILO’s for Selected Topics in CS-1 course for Fall 2021

Team No. \*\*\*\*

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Delivered to:

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I. NUMERICAL DATASET

1. Project Introduction

* 1. **Dataset Name**

online\_shoppers\_intention‏

* 1. **Number of classes and their labels**

17 class & 1 label

* 1. **Dataset Samples Numbers**

12330

* 1. **Training, Validation and Testing**

**Training (60%): 7891**

**Validation (20%): 1973**

**Testing (20%):2466**

|  |  |  |
| --- | --- | --- |
| **Training**  **80%**  **9864 sample** | | **Testing**  **20%**  **2466 sample** |
| **Training**  **60%**  **7891 sample** | **Validation**  **20%**  **1973 sample** |

1. Implementation Details
   * 1. **Extracted Features**

(How many features were extracted, their names, the dimension of resulted features)

11 Features

Names: - Administrative , Administrative\_Duration Informational , Informational\_Duration , ProductRelated BounceRates , PageValues , SpecialDay , Weekend Visitor\_New\_Visitor , Visitor\_Returning\_Visitor

the dimension of resulted features: 12330

* + 1. **Cross-validation**

(Is cross-validation is used in any of implemented models? If yes, specify the number of fold and ratio of training/validation)

**NO need cross validation because dataset is big**

* + 1. **Artificial Neural Network (ANN)**
* **Hyper-parameters**

(Specify all the hyper-parameters (initial learning rate, optimizer, regularization, batch size, no. of epochs…) with their specified value in implementation)

Initial Learning: - 0.001

Optimizer: - Adam (adaptive optimizer)

Regularization : No need Regularization because no overfitting

Batch Size: 400

NO.OF.EPHOCS: 100

* + 1. **Support Vector Machine** **(SVM)**
* **Hyper-parameters**

(Specify all the hyper-parameters (optimizer, regularization, …) with their specified value in implementation)

1. Models Results

**For each model you should show all these results for your model on testing data** (loss curve, accuracy, confusion matrix, ROC curve)

* 1. **ANN Results**

**Loss Curve**

**Chart

Description automatically generated**

**Accuracy & confusion matrix**

**Text

Description automatically generated**

**ROC curve**

**Chart

Description automatically generated with medium confidence**

* 1. **SVM Results**

II. IMAGE DATASET

1. Project Introduction

* 1. **Dataset Name**

(What is the dataset used?)

* 1. **Number of classes and their labels**

(Specify number of classes and their labels.)

* 1. **Dataset Images Numbers and size**

(The total number of images in dataset and the size of each.)

* 1. **Training, Validation and Testing**

(The number of images used in training, validation and testing.)

2. Implementation Details

* + 1. **Extracted Features**

(How many features were extracted, their names, the dimension of resulted features)

* + 1. **Cross-validation**

(Is cross-validation is used in any of implemented models? If yes, specify the number of fold and ratio of training/validation)

* + 1. **Artificial Neural Network (ANN)**
* **Hyper-parameters**

(Specify all the hyper-parameters (initial learning rate, optimizer, regularization, batch size, no. of epochs…) with their specified value in implementation)

* + 1. **Support Vector Machine** **(SVM)**
* **Hyper-parameters**

(Specify all the hyper-parameters (optimizer, regularization, …) with their specified value in implementation)

3. Models Results

**For each model you should show all these results for your model on testing data** (loss curve, accuracy, confusion matrix, ROC curve)

* 1. **ANN Results**
  2. **SVM Results**