concordance=TRUE

Coursework
Group 2 Report - CMM507

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February 23, 2020

Objective

To understand plastic pollution in oceans.

- How much plastic pollution there is
- How it is distributed
- Where it is coming from
- What is it made of

1 Problem Statement

There is a lot of plastic in the ocean - it is bad for marine life, and for us humans. Plastics are generally created as waste in macro form, but over time it degenerates into micro-plastic size where it becomes hard to remove from the oceans, but never really decomposes.

1.1 Overview

This report seeks to combine published datasets and peer-reviewed articles to create a comprehensive presentation of the plastic pollutions problem.

1.2 Motivation

Section by Roshi

1.3 Objectives

The main objectives of this project can be outlined as follows:

2 Research

Knitr package was used in this work[4], more details about clustering can be found at [3]. A detailed description of class-decomposition can be found at [2]. This method was applied to process Engineering Drawings [1].

3 Methods

3.1 Data Collection

Using only secondary data. No primary data collection.

3.2 Exploration - Pre-processing

In this project iris was used, the dataset is made of 150 rows and four features.

Notice how we generate graphics within the sweave document. Check the following code, we will create a function that either finds x^2 or x^3 subject to parameters passed in the function

```
# create a vector of doubles
myNumbers <- seq(from=-1,to=1,by=.1)

# function definition
toPower <- function (x,p=2) {
    if (p==2)
        return (x*x)
    else if (p==3)
        return (x*x*x)
    return (x*x)
}

# call function
squared <- toPower(myNumbers)
cubes <- toPower(myNumbers,3)
```

An easy way to check that our function is doing the right calculation is to plot the results. The code below will generate a figure similar to Figure 1:

```
plot(myNumbers,cubes,type='b',xlab = 'x', ylab = 'x*x',frame=FALSE,col='blue')
```

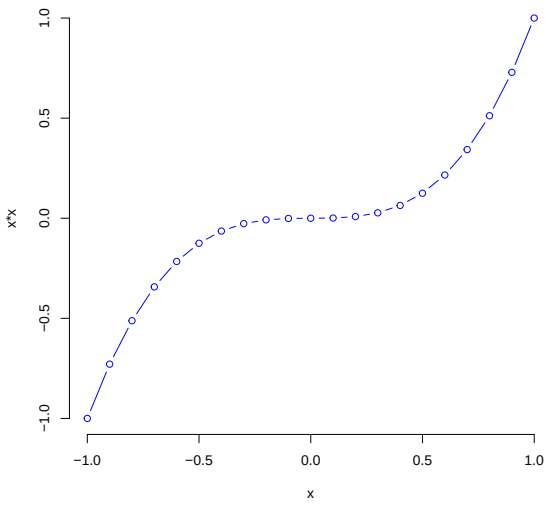

Figure 1: Simple Plot of $f(x) = x^3$ Function

3.3 Experiments

Now we can show how the function $f(x) = x^2$ looks like (Figure 2)

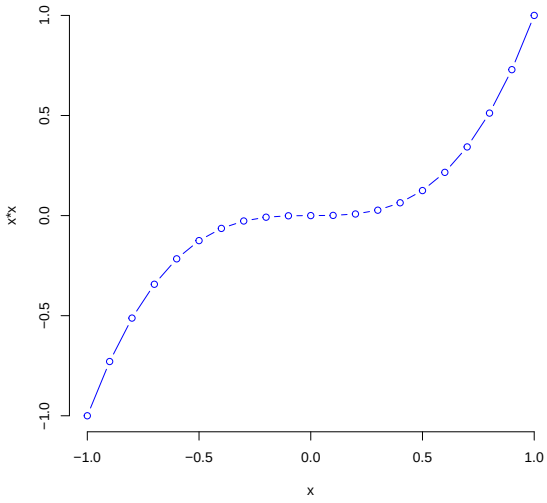

Figure 2: Simple Plot of $f(x) = x^3$ Function

4 Conclusion and Future Work

5 Project Management

5.1 Project Progress

Table 1: Record of Team Meetings

No	Date	Topic	John	Ali	Ann	Mon
1.00	2019-02-05	Team Formation Formation Formation Formation Formation	yes	yes	yes	yes
2.00	2019-02-06	Team Formation	yes	yes	yes	yes
3.00	2019-02-07	Team Formation	yes	yes	yes	yes
4.00	2019-02-08	Team Formation	yes	yes	yes	yes
5.00	2019-02-09	Team Formation	yes	yes	yes	yes
6.00	2019-02-10	Team Formation	yes	yes	yes	yes
7.00	2019-02-11	Team Formation	yes	yes	yes	yes
8.00	2019-02-12	Final Meeting	yes	yes	yes	yes

5.2 Peer-assessment

Same as we did with Table 1, we can also generate the peer-assessment table providing that we record things in an excel sheet.

Table 2: Peer Assessment out of 100

Peer.Review	Alex	Georgios	Karen	Roshi	Stuart
Alex	100	100	100	100	100
Georgios	100	100	100	100	100
Karen	100	100	100	100	100
Roshi	100	100	100	100	100
Stuart	100	100	100	100	100

References

[1] E. Elyan, C. M. Garcia, and C. Jayne. "Symbols Classification in Engineering Drawings". In: *2018 International Joint Conference on Neural Networks (IJCNN)*. July 2018, pp. 1–8. DOI: 10.1109/IJCNN.2018.8489087.

[2] Eyad Elyan and Mohamed Medhat Gaber. "A fine-grained Random Forests using class decomposition: an application to medical diagnosis". In: *Neural Computing and Applications* 27.8 (Nov. 2016), pp. 2279–2288. ISSN: 1433-3058. DOI: 10.1007/s00521-015-2064-z. URL: https://doi.org/10.1007/s00521-015-2064-z.

[3] Eyad Elyan and Mohamed Medhat Gaber. "A genetic algorithm approach to optimising random forests applied to class engineered data". In: *Information Sciences* 384.Supplement C (2017), pp. 220–234. ISSN: 0020-0255. DOI: 10.1016/j.ins.2016.08.007. URL: https://doi.org/10.1016/j.ins.2016.08.007.

[4] Yihui Xie. *knitr: A general-purpose package for dynamic report generation in R*. R package version 1.4.1. 2013. URL: http://yihui.name/knitr/.