Preliminary Report for Project: Hidden Topic Discovery Using Machine Learning

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Abstract

Declaration

I confirm that I have read and understood the Universitys Academic Integrity Policy.

I confirm that I have acted honestly, ethically and professionally in conduct leading to assessment for the programme of study.

I confirm that I have not copied material from another source nor committed plagiarism nor fabricated, falsified or embellished data when completing the attached piece of work. I confirm that I have not copied material from another source, nor colluded with any other student in the preparation and production of this work.

SIGNATURE.. DATE...

Contents

1   Introduction

Include a statement of the problem to be investigated, and why is addressing this problem worthwhile or important. This section should also introduce the history and theoretical background of the problem, a brief statement of the general procedure adopted and hint at expected results. This section is sometimes broken down into subsections: Objectives and Theoretical Background.

2   Materials and Methods

The materials list can be a simple list of all the equipment/apparatus used, in as much detail as possible (eg. mention the make/model of things like signal generators, the values of all components, the exact model of any development boards used etc). If you are using software, the name and version of the software is important.

The Method/Procedure section describes the experimental process in chronological order (i.e. in the order in which they happened). If you did not follow the documented procedure for any reason, make sure this is mentioned (e.g. "At step 4 four repetitions were performed instead of three, and the data from the second repetition was ignored. This is due to a circuit fault that was discovered that called the accuracy of these readings into question.")

3   Results

This is where you describe the important qualitative and quantitative observations from the experiment. Data should be tabulated and/or graphed. Graphs must always be captioned (as with figures, above), and axes clearly annotated with units. Always follow your graphs with a brief description, demonstrating your understanding of what has been plotted (eg. "The graph in Fig. 4 illustrates the frequency response of this circuit, with a clear resonance peak at 15 kHz.") as tables and graphs are rarely self-explanatory. If the results differ from what was expected, explain both **how** (i.e. in what way) and **why** (i.e. possible reasons behind this behaviour) when referring to these results.

The summary of the experimental results is presented in Table 1

Table 1: Note that table captions are placed above the tables, not below as for figures

P (W)	V (V)	I (A)
0.0 ± 0.01	0.0 ± 0.01	0.0 ± 0.01
0.1	0.2	0.3
0.1	0.2	0.3
0.1	0.2	0.3

4   Discussion

The Discussion section allows you to fully discuss and interpret the results and the results of the any analysis carried out. It is also important here to relate your findings to the experimental

Table 2: Resistance and Temperature of the Filament

R (Ω)	T (K)	$1/T$ (K^{-1})	$\ln P$
151.00±3.92	828.35±23.46	1.2072×10^{-3}	-13.29
157.12±3.71	856.88±22.25	1.1671×10^{-3}	-12.64
162.53±3.49	881.99±21.02	1.1338×10^{-3}	-12.33
166.67±3.33	901.14±20.13	1.1097×10^{-3}	-11.90

objectives, i.e. do your results support the theoretical background, and have the objectives of the experiment been met? Are the results reliable and/or significant?

Mathematical expressions can be included in LATEXdocuments easily by surrounding them in $ signs, such as f, δx, Ω_2, $y = mx + b$ or $\mu = \frac{1}{N} \sum_{i=1}^{N} x_i$. Numbered equations can be created just as easily using the `equation` environment:

$$\mu = \frac{1}{N} \sum_{i=1}^{N} x_i. \tag{1}$$

When making reference to the above equation, you simply need to mention the label, as in "`...as shown in Equation~\ref{eq:mean}.`", and the Equation number will be inserted automatically. If you need to show several lines of mathematical expressions, you can use the `eqnarray` environment as below:

$$P = IV \tag{2}$$
$$= I^2 R \tag{3}$$
$$= \frac{V^2}{R} \tag{4}$$

Further guidance on writing and manipulating mathematical expressions, symbols and equations can be found online in references such as [?].

5 Conclusions

This final section contains a brief statement to summarise the outcome of the experiment, and a statement outlining to what extent the objectives of the experiment have been met, and what has been learnt as a result of this. In some ways the Conclusions section is a reflection of the Abstract, reiterating what the experiment was aiming to achieve, and summarising the outcomes. It can also be thought of as a summary of the Discussion section.

References

Appendices

These Appendices are all optional...

A   Tables

B   Program Listings

Program listings and source code can be neatly incorporated into your reports by including them in a **\lstlisting** environment, as in Listing 1 below, or if you are constantly editing your program, you could import the code directly from the source itself (provided you've uploaded it to your ScribTeX workspace). In this way, whenever you modify the source, all you need to do is recompile the LaTeXcode and your report document will automatically be updated. The command to use would be something like **\lstinputlisting{MY_CIRCLE.m}**.

Listing 1: This is how to include some source code

```matlab
[x,y] = MY_CIRLCLE(x_centre, y_centre, radius)

% MY_CIRCLE.m − A MATLAB function to draw a circle on the screen
% Syntax is:
%            [x,y] = MY_CIRLCLE(x_centre, y_centre, radius)
%
% Waleed Al−Nuaimy, 1st July 2011

theta = linspace(0, 2*pi, 200);          % in radians
x     = x_centre + radius*cos(theta);    % radius can be negative!
y     = y_centre + radius*sin(theta);
plot(x,y,'r−')                           % connect using red line
axis('equal')                            % to preserve aspect ratio
ylabel('y')
xlabel('x')
title(['Circle centred at (',num2str(x_centre),',', ...
       num2str(y_centre),') of radius ',num2str(radius)])
```

C   Log Book

D   Data Sheets