Coursework Report Template for Module INM433 “Visual Analytics”

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**Abstract**—Put here a brief summary of your work: analysis task, data, approach, main findings. Length: up to 200 words.

# Problem Statement

The objective of the analysis presented in this paper is to study the crime rates in the London (i.e. by ward and by borough) overtime and try to see if there is any correlation with other characteristics of census data within the same areas. Therefore, the key questions are:

* Is there a pattern in the increase/decrease of the crime rate overtime?
* Do those patterns have a spatial collocation (i.e. neighboring boroughs following the same pattern)
* Are those patterns correlated with similar increase of decrease in the area demographics?

The study spans a period of 8 years (2010-2018). In April 2010 there was a change in the ward code boundaries therefore the data available before 2010 are not considered to avoid skewing the results. The key socio-economic characteristics used for the analysis against the crime rates are:

* Gender: i.e. the makeup of the areas in terms of male, female population
* Employment: i.e. the employment status of the residents in those areas also broken down by gender and type of employment

The data collected for the factors that will be accessed for their impact in the crime rate are at borough rather than ward level so human reasoning supported by visual representation will be required to see if it is meaningful to group wards by borough for the purposes of this analysis.

# State of the Art

First paragraph...

Following paragraphs...

*<500 words*

# Properties of the Data

First paragraph...

Following paragraphs...

*<500 words, <=2 images*

# Analysis

## Approach

First paragraph...

Following paragraphs...

*<500 words, 1 diagram*

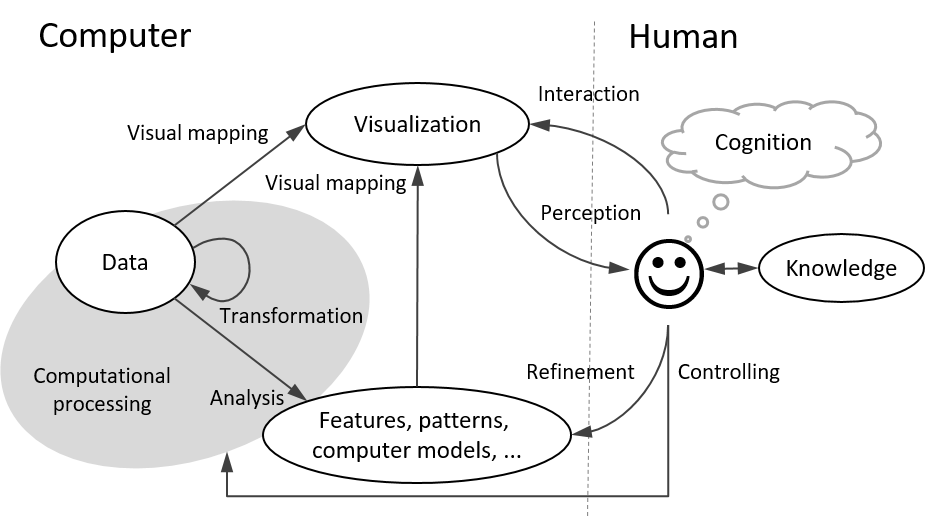


Fig. 1. An example of including a diagram in the document.

## Process

First paragraph...

Following paragraphs...

*<1500 words, <=7 images*

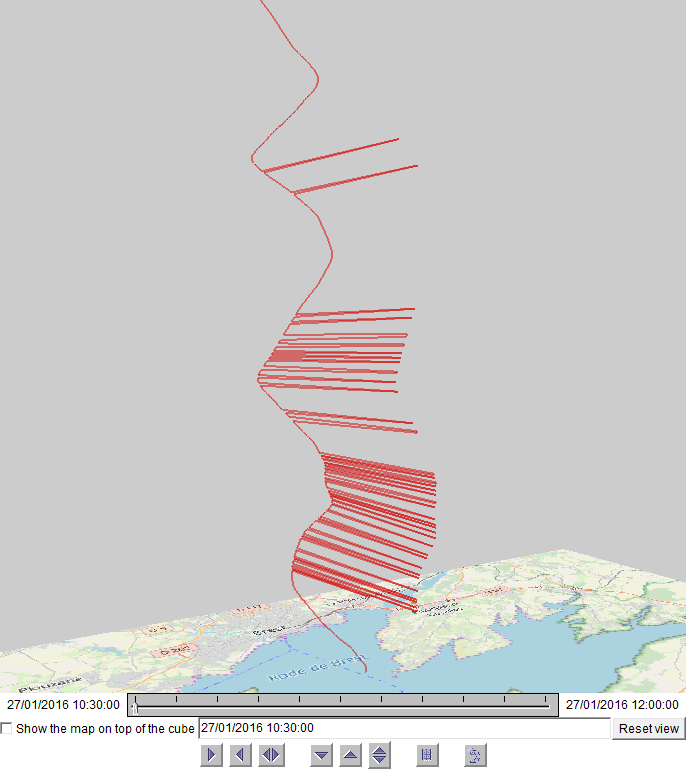


Fig. 2. An example of including a screenshot in the document.

## Results

First paragraph...

Following paragraphs...

*<200 words, <=2 images*

# Critical reflection

First paragraph...

Following paragraphs...

*<500 words*

Table of word counts

|  |  |
| --- | --- |
| Problem statement | 220/250 |
| State of the art | 500 |
| Properties of the data | 500 |
| Analysis: Approach | 500 |
| Analysis: Process | 1500 |
| Analysis: Results | 200 |
| Critical reflection | 500 |

References

The list below provides examples of formatting references.

1. M.Ankerst, M.Breunig, H.-P.Kriegel, J.Sander. OPTICS: Ordering points to identify the clustering structure. In: *ACM SIGMOD* 1999, pp. 49–60.
2. M. Bögl, W. Aigner, P. Filzmoser, T. Lammarsch, S. Miksch, and A. Rind. Visual Analytics for Model Selection in Time Series Analysis, *IEEE Trans. Visualization and Computer Graphics*, 19(12): 2237-2246, 2013.
3. T.F. Cox, M.A.A. Cox. *Multidimensional Scaling*. Chapman and Hall, 2001.
4. S. van den Elzen and J.J. van Wijk. BaobabView: Interactive construction and analysis of decision trees, *Proc. IEEE Conf. Visual Analytics Science and Technology (VAST’11)*, pp. 151-160, 2011.
5. M.Harrower, C.A.Brewer: Colorbrewer.org: An online tool for selecting color schemes for maps. *The Cartographic Journal* 40(1): 27–37, 2003.
6. T. Mühlbacher and H. Piringer. A Partition-Based Framework for Building and Validating Regression Models, *IEEE Trans. Visualization and Computer Graphics*, 19(12): 1962-1971, 2013.
7. D. Phan, L. Xiao, R. Yeh, P. Hanrahan, T. Winograd. Flow map layout. In *Proceedings of the IEEE Symposium on Information Visualization (InfoVis 2005)*, pp.219-224, Oct. 2005.
8. J.W. Sammon. A nonlinear mapping for data structure analysis. IEEE Transactions on Computers, 18(5): 401–409, May 1969.
9. J. Sewall, D. Wilkie, and M.C. Lin. Interactive Hybrid Simulation of Large-Scale Traffic, *ACM Transactions on Graphics*, 30(6), Article 135.
10. N. Willems, H. van de Wetering, J.J. van Wijk. Visualization of vessel movements. *Computer Graphics Forum*, 28(3): 959-966, Jun. 2009.