STRATEGIC FACILITY & ASSET MANAGEMENT - MACHINE LEARNING BASED METHODS

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BRIEF OF STUDY:

One of the **common challenges** faced by **facility/asset professionals** is that they were exposed in an **"information-saturated"** and **"data rich"** facility management environment, but, their **knowledge and tools** over how to **utilize** this rich **FM information** are **scattered** and **limited**.

The **existing building asset data** remains **un-serviced** and **neglected** during many of **strategic asset management decision-making processes**.

Machine Learning technology is **proved** to be able **to tackle with data related problems** in many of industries that have a **vast amount of labelled or unlabelled data**.

MAIN RESEARCH AIM AND OBJECTIVES:

To **provide an understanding of how** the facility management industry can **achieve better strategic asset planning** throughout applying **Machine Learning** Technology in **asset data management/analysis processes** in all of building life-cycle phases

Research Study : APPLYING TEXT CLASSIFICATION FOR STRATEGIC BUILDING ASSET DATA MANAGEMENT

A BRIEF INTRODUCTION:

With the development of the **PPP (Public Private Partnerships)**, some facility management industry pioneers have started to concentrate on **managing different building assets strategically** as a **portfolio base**. So that similar building assets can be managed on a wider strategic approach (IAM, 2016)

Projects under **portfolio based strategic asset management**, in many cases, were **surveyed** by **different in-house or out-source surveyors**, which create various **interoperability** issues. **Data analysts** are usually required to **recode and categorise** different assets from **different projects** according to the **standardised asset coding format** (e.g. BCIS Code (RICS, 2012))

PROBLEM IDENTIFICATION:

The current problem is **recoding processes** are often **error-prone**, as they are **costly**, **mechanically**, **repetitively**, and **manually** conducted categorisation activities. To obtain **better accuracy** and **liberate data analyst** from doing the highly **repetitive classification task** over and over again. We need a better solution to **lower the cost of asset standardisation** and **solving interoperability** problem **between different projects**.

For instance, two different **vendors** might **interpret** the **same standard** in two **different ways** during the **encoding** of the **same piece of information** (Shen et al., 2010)

We need to **customise the data structure** and **meet** the **needs of different stakeholders** (e.g. building owner/manager) in a **timely manner**

RESULTS & DISCUSSION:

Overall, results from this research indicate that the **deep learning network can classify building assets according to BCIS NRM level-3 group** with a considerable **high accuracy rate** (over 90%) for the test dataset.

The result confirms that the **CNN Classifier** can achieve **better accuracy performance** than the **manual classification** done by junior building **data analysts at 65.91%** with a **shorter classification time at only 13 mins** rather than the **hours of manual classification process** previously.
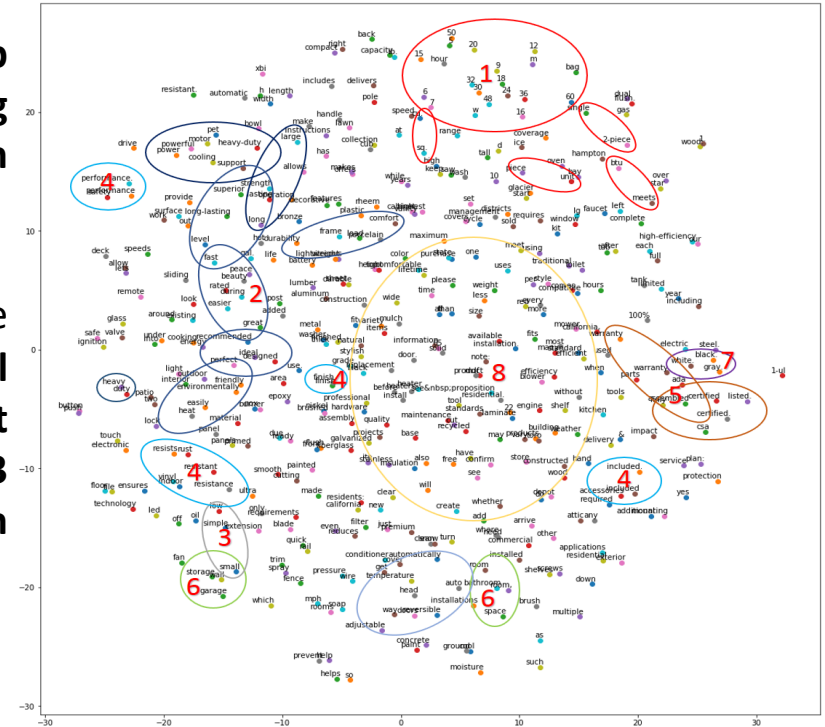
There are many patterns that can be recognised through the embedding model.

Thank you