

Analytics extension for task management software

Swetha Priya E

SAP

SAP SSZ, Bangalore, 560103,

swetha.esp95@gmail.com

ABSTRACT

This work is an extension to time management software that use [Eisenhower method](#). All the tasks will be segregated into one of the genres of [DMOZ taxonomy](#) and analyzed. The analysis will be represented in two forms.

1. Matrix analysis: Each genre in the DMOZ taxonomy falls into the quadrant that has highest number of tasks of that genre.
2. Bar Graph analysis: This shows the bar graphs that show the number of tasks performed in each genre

From matrix analysis, the user gets an idea of how he has prioritized his tasks in the past month/year. The bar graph analysis shows him how many tasks he has been doing in each category. These insights will serve as a feedback and reality check to the user and helps him take required actions

AUDIENCE

Any person who understands what Artificial Intelligence(AI) is, is suitable audience. **Beginner** level understanding of Machine Learning(ML), AI will be sufficient.

INTRODUCTION

Track: AI (Natural Language Processing (NLP))

Time management has become indispensable to everyone, be it a student or a CEO. Every person juggles a number of tasks each day that are different in their kind, urgency and priority. Various time management apps have come up like mushrooms. There are numerous apps for task management which include Google's Google Tasks, Todoist and Gqueues. However, none of these apps became a hit. While there is a spectrum of reasons for this, lack of feedback is one of the main reasons. None of the apps gives feedback to the user about his/her performance/focus areas/if he is in the path he wanted to be and so on. In this work, the motive is to analyze one's tasks and provide useful insights.

TERMS USED:

Task/to-do – user's action item

Ex: Buy vegetables, go to gym etc.,

Quadrant – quadrant number(1-4) in Eisenhower matrix.

DMOZ taxonomy - DMOZ is largest, most comprehensive directory of the world wide web links. It categorizes and arranges all the links into categories and sub-categories. The official DMOZ site was closed in 2017. However, the work is available on the internet and is being continued by volunteers.

DMOZ has 15 parent categories which branch out into numerous categories and sub-categories. The fifteen categories are Arts, Business, Computers, Games, Health, Home, News, Recreation, Reference, Regional, Science, Shopping, Society, Sports, Kids & Teens Directory.

Genre – The user tasks will be categorized into one of the 15 DMOZ parent categories. Genre is used analogous to the parent category in this paper.

Event Registry – Event registry is a web-based software provider. We use their API for text categorization in this work.

Focus – quadrant 1 – important and urgent

Goals – quadrant 2 – important and not urgent

Delegate – quadrant 3 – not important and not urgent

Burnout – not important not urgent

INPUT FORMAT

Task1 – quadrant

Task2 – quadrant

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.

.

Task3 – quadrant

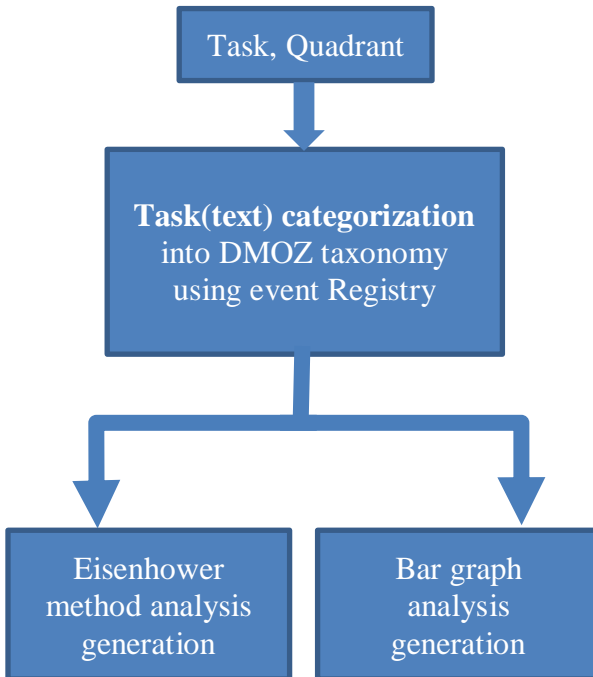
Where,

Task – Natural Language Text (in English)

quadrant – integer (form [1,2,3,4])

- 1 – important and urgent(Focus)
 - 2 – important not urgent(Goals)
 - 3 – not important urgent(Delegate)
 - 4 – not important not urgent(Burnout)
- The tasks are collected from the previous month/year

WORKFLOW



TASK CATEGORIZATION

Text categorization/classification is one of most worked upon areas of NLP and has wide range of applications. Classification is a Machine learning application in which given input is classified into pre-defined classes. We are implementing single labeled categorization which means that each input (here task) can belong to only one category(here genre)

[Categorize text](#) does this function and we use this API to achieve text categorization. This API returns five results that are with certain probability. We choose the genre with maximum confidence and discard the rest. This is not necessarily the best way.
 Ex: “Buy vegetables” gets categorized into the genre “Shopping”. “go to gym” gets classified into “Health”

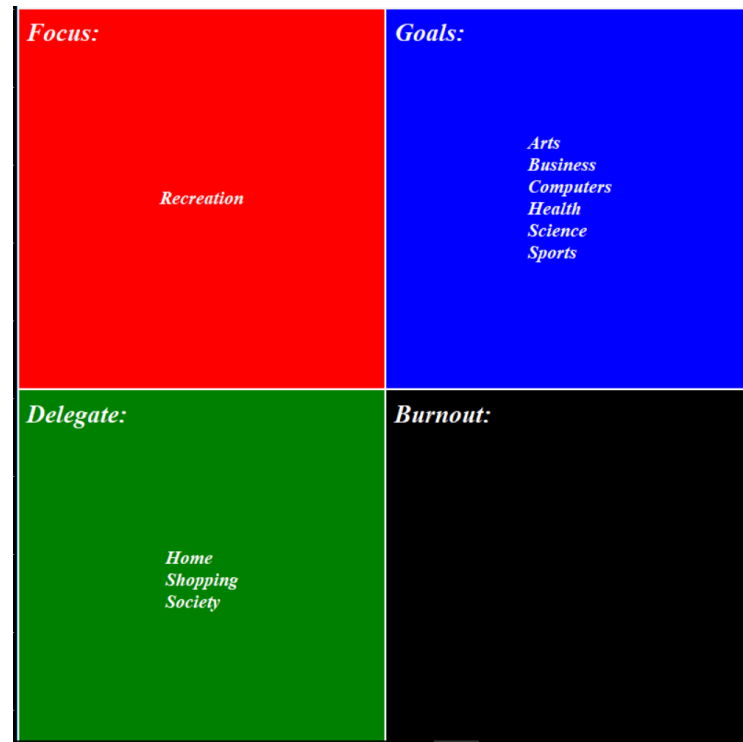
EISENHOWER ANALYSIS

The idea of this analysis is to assign a quadrant to each genre. This is done based on the number of tasks (of that genre) in each quadrant. The quadrant with no tasks will not appear in the analysis.

For example, if the genre “Health” has 5 tasks in total, out of which 3 are in quadrant 1, 1 in quadrant 2 and one in 3, “Health” will find its place in quadrant($\max(3,1,1) = \text{quadrant}(3) = 1$).

Once all the genres are placed into quadrants, a matrix is shown with the genres in respective quadrants. Following is a sample generated for a set of tasks.

Generated Eisenhower Analysis:



Insights:

From looking at the above matrix, one can easily say that the user in discussion gives high priority to Business, health, recreation. From this we can conclude that the person takes good personal care.

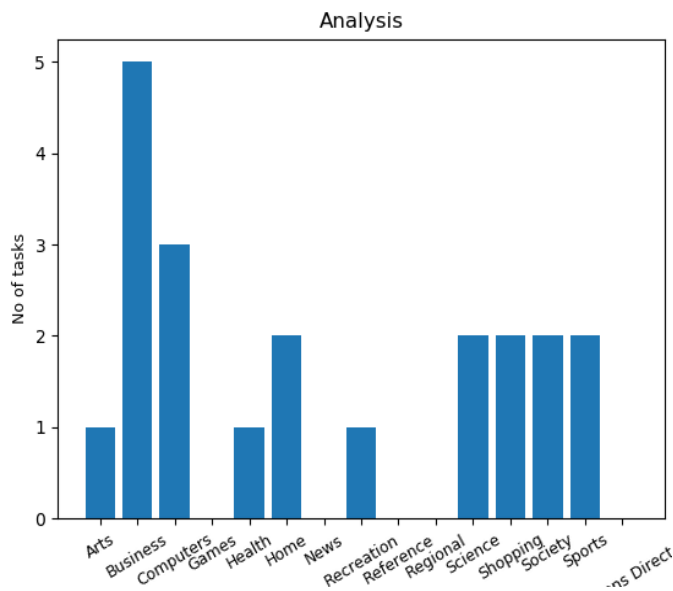
He has Recreation in Focus (quadrant 1), this means he considers recreation as something important and urgent. From this we might say that the person is undergoing stress.

These are few instances of how the matrix can be used to get insights into how user is doing.

BAR GRAPH ANALYSIS

A bar graph is generated with genres on the x-axis and number of tasks of the genre on y-axis.

Generated Eisenhower Analysis:



Insights:

From the bar graph, we can see that user did only one task in recreation and numerous in Business.

Combining this insight with the insight from Eisenhower matrix that the person might be experiencing stress, we can say that the person has taken a break when he was stressed and that there is nothing to be worried about.

User has 2 tasks in sports, shopping and 5 in business being the highest. From this we can say that the person might be in the business stream and shopping, sports are his favorite recreation.

OUTCOMES

The implementation can be found [here](#). It's tested and the results are analyzed and documented in detail.

This can be improved lot more by introducing number of feature and improving the existing ones.

Scope for further work:

1. Improve text-categorization
2. Auto generate insights

3. Use previous month/year insights while generating insights of later month/year
4. Connect it to other utilities like shopping sites to auto generate wish-list, medical sites to fix doctor appointments etc.,

PARTICIPATION STATEMENT

A venue with woman majority full of enthusiasm, brilliance and smiles, just the thought is very inspiring. Being there and witnessing all the amazing brains in action is a life time's opportunity I can't afford to miss. Goodies just make everything better.

BIO

I have completed my Bachelor's degree in Technology from the prestigious Indian Institute of Technology, Madras(IITM). AI, specially NLP fascinates me. Apart from the courses from college, I have worked for Microsoft in field of NLP, ML to map Wikipedia pages to relevant web-adds.

REFERENCES/BIBLIOGRAPHY

[Github code link](#)

[DMOZ - wikipedia](#)

[Event Registry – text categorization](#)

[Python Tkinter for graphs](#)

[Eisenhower method -wikipedia](#)