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**Developing a task-recommendation system to make users more productive**

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1. **Introduction**

Time is an entity which is standard for every living person on this earth. Everyone on this earth has only 24 hours per day. Time can neither be exchanged nor can be bought. It is an invaluable element of this planet. Even in the current day scenario, with all the advanced technologies being available, Time and Task Management are considered one of the crucial aspects in everyone's day to day life. Many people face challenges in allocating time for their day to day activities regarding both their work and personal life. Here are a few statistics about employees time management: 23% of US workers are dissastisfied with their worklife balance(Harris Interactive for Career Builder, 11/2009), and 70% of employees work beyond scheduled times and on weekends(Society of HRM, Spring 2009). Not only employees but every individual like students, scientists, professionals and project managers, etc. face a lot of time management issues in their daily life.

To overcome this problem, we are developing a task recommender system which helps its users to manage their tasks and time efficiently so that they could increase their productivity in the means of task completion and effective time usage. There are a lot of task management applications in the current day market like Wunderlist, To-doist, Evernote, etc. which are very useful in scheduling, tracking and reminding tasks for the users, but there are very few applications or systems which aim at recommending tasks to the users and making their time more productive. We are creating a recommender system which suggests a specified type of task and a specified duration of the task for a given period of time on a particular day. For example, our system on a weekday morning may recommend doing some work out for one person where as it can suggest doing some academic activity for some other person. All these recommendations are made based on individual users preference and data that is gathered from users.

1. **Methodology:**

Initially, we collect some preferences from users and start recording their daily tasks and activities. We record daily tasks based on the following factors: Day of the week (Weekday/Weekend), Time of the day(Morning, afternoon, evening, night, etc.), Type of the Task(Physical, Social, Religious, Chores, etc.), Task Location (Outdoor / Indoor), weather (if outdoor), Task Duration (very-short, short, long, very-long), Task Completion Satisfaction Rating(Out of 5) by user. Later, After a certain threshold of tasks getting recorded, we start making recommendations based on the preferences and the recorded tasks. We make recommendations on the optimal type of the task, and optimal duration of task for the above mentioned given factors.

Primarily, we started providing recommendations by calculating the correlation between the above mentioned factors vs. Task completion satisfaction. The task which has the higher correlation with respect to Task completion satisfaction rating was provided as a recommendation, and later the correlation was calculated including the duration of task and suggestions were made based on the highest scorer among them. But, now we are focusing on implementing content based filtering recommendation system by using machine learning algorithms such as Support Vector Machines, Decision tree, Bayesian Classifiers, etc. We are planning to collect real time data from 10-20 people for a time period of 1-2 months with all the above mentioned factors so that we will have a database to work on. Then, we implement the machine learning algorithms against the accumulated dataset. Later, we will test the results with various algorithms and decide on the algorithm which gives the best test results.

One more important aspect of this system is the visual analytics and presentation of the recommendations. We want to identify how the visual aids and type of representation can impact the users. We want to test whether using more in-depth visual analytics in contrast to simple visual analytics like bar graphs, pie charts, etc. can make an impact on users task management behaviour. We also want to research how to drill down the overall data and present the required content to the user.

1. **Conclusion:**

Finally, the user will have the ability to either accept or reject the provided recommendation provided by the system. We are focusing on to build a system which can learn from the acception or rejection of the recommendation and which perform well in terms of acception rate from the next set of recommendations. In this way, if the system can provide more relavant recommendations to the user, it will be helpful to make the user’s time more productive and efficient.

**References**

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