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OPTIMIZED TIME MANAGEMENT AND SCHEDULING FOR USERS

ABSTRACT

Disclosed herein is a mobile intelligent scheduling system and method that integrates events, historical conditions and auxiliary data into a series of reminders and automated actions. The system optimizes the entire timeline to meet a set of goals, rather than focusing on a single event, condition or reminder. The system accesses and aggregates schedule information and creates a calendar flow for users that works backward in time and integrates multiple events and conditions. The system alerts or reminds the user with appropriate text messages and integrates the historical data to arrive at optimized time schedules. Alternatively, the system could automatically react to changing conditions and has the additional advantage of being objective, predictive and independent.

BACKGROUND

While a user is on a business trip and his/her flight departs the next day noon, he/she would want to optimize the schedule for the remaining day and the next day morning including dinner, taxi, a good night's rest, morning coffee, work, and travel to the airport with sufficient arrival time for airport security and check-in (based on typical delays at that time, combined with the priority status, etc). Currently available tools execute portions of the scheduling such as when the user should depart accounting for traffic. However, a user’s sleep preferences and habits while traveling should also be factored into when he/she should go to bed and get up, which in turn would affect other portions of the schedule.

Thus, a user requires a mobile device that automatically schedules appropriate alarms/reminders for the user at each stage, based on an optimal schedule, working back from specific requirements.
DESCRIPTION

The disclosure relates to a mobile intelligent scheduling system and method that integrates events, historical conditions and auxiliary data into a series of reminders and automated actions. The system optimizes the entire timeline to meet a set of goals, rather than focusing on a single event, condition or reminder. A schematic of the system is shown in FIG. 1, which illustrates how the system combines user information and external data for intelligent scheduling.

A mobile device already records (or has the ability to record) information. For example, it may record the device motion information, device data, such as charging data (e.g. charging patterns), alarm settings, or sound-level activity. This data could be obtained through integration with a wearable health measurement device. Likewise, the devices are aware of the device location data (via location history or registered locations). Information regarding how they commute can be obtained via velocity and GPS data. The event data, (e.g. appointment data, reservation data), can be accessed via a calendar app or scraped emails. The travel data could be obtained from emails using a scraping application.

In this system, such data can be combined with external data in the manner shown in Figure 1. Such external data can comprise:

1. Traffic and anticipated traffic for the travel data.
2. Flight times, delays, length of security lines.
3. Distance (time and space) between car rental and airport security, security and gates, etc.
4. Taxi availability and reservation times.
5. Hours of sleep needed to be productive.
FIG. 1: System for intelligent optimized scheduling

The system creates a calendar flow for the user that works backward in time and integrates multiple events and conditions listed above. The displayed calendar flow would include pertinent times such as:

A. Time of flight, boarding time, the planned arrival time at the airport and time required by the user to go through the airport (check-in, security, transit to gate, etc.).

B. Time at which the user should depart for the airport from his/her hotel based on GPS and reservation data in email (or other sources), traffic near the time of the flight and known construction delays. If the user has rented a car, then the time it would factor how long it would take to return to the airport and the extra transit time from the rental center to the security line. If the user has taken a cab or public transport then the system would factor in the time required for clearing airport security lines. The system would also factor in whether it was a domestic flight or international (which typically need additional time to check in).
C. The daily routine, both at home and away is also factored in.

D. An alarm/reminder for bedtime, based on predicted or recorded wake up time and recommended sleep times (for example, allowing for more sleep time if the user is driving than if the user has to take a cab).

E. An alarm/reminder as to when the user should leave any event the user attends the previous night, making sure the user is in sync with the proposed bedtime.

The method for creating a calendar flow for mobile intelligent scheduling as depicted in FIG. 2 and comprises the following steps:

(i) Accessing schedule information and aggregating past behavior and timing;

(ii) Identifying a deadline or event such as a flight, a business trip or appointment;

(iii) Accessing historical and real-time aggregated data regarding travel (taxi, airport delays etc.) to identify constraints;

(iv) Creating a calendar flow from steps (i) – (iii) using the deadline and constraints from steps (ii) and (iii);

(v) Presenting choices for the user relating to his schedule based on the calendar flow generated in step (iv); and

(vi) Scheduling/adjusting based on user inputs.
Additionally, the system could be configured to automatically react to changing conditions by identifying user actions or external constraints and notifying the user appropriately. For example, if the flight time changes or traffic conditions change, the schedule would be updated automatically and all that the user needs is to follow the change in schedule.

The system alerts or reminds the user with appropriate emails, alerts, push notifications, etc. and integrates the historical data to arrive at user-appropriate schedule. For example, the alert text could read "I see you have a flight tomorrow morning at 9 a.m. Would you like me to set your alarm for 7 a.m.?", "With usual traffic for a Thursday, you'll still be at the airport 1h before your flight - you have airport security lines, so you should be at your gate at least 30m before the flight. If you need more time, tell me how much. Also, I assume you want to sleep for
8 hours, so I can remind you when it’s time to go to bed", "Would you like me to book tomorrow morning’s taxi for you now?"

The system has the additional advantage of being objective, predictive and independent. For example, the user may be more inclined to stay late at a dinner, thinking it has little impact, whereas doing so could cascade into affecting traffic, taxi availability, etc. Hence, an independent calendar reminder could be valuable for the user at the party to say "oh, my phone is telling me I need to go to the hotel now" and would appear more authoritative and favorable in place of the user just saying "I need to go to bed early".

The system allows users to think less and stay relaxed even at the end of his/her vacation or business trip as it keeps a record of all the upcoming travel and events. Such integrated optimized time schedules can be difficult for a user to generate. Even if one has a good view of all the aspects of optimal travel (e.g., one’s desired sleep quality and taxi availability), combining all such factors can be difficult and time consuming.

Rather than focusing on individual events (an appointment, a flight), a condition (traffic), a time (enough in advance) and a reminder (it is time to leave now if you want to be on time), this invention chains events, historical conditions, auxiliary data into a series of reminders and automated actions to optimize the entire timeline to meet a coordinated set of goals.