Dream Mornings - Raspberry Pi, Blue Fruit, and Sensor Based Sleep Cycle Adaptive Alarm Clock

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My device "Dream Mornings" measures various biometrics to identify sleep stages to wake its user up at an ideal point in their sleep cycle. Traditional alarm clocks ring at a specified time and do not take your sleep cycle into account which can mean being woken up in an unideal spot (like stages N3 & REM) resulting in mental fogginess and unpleasant mornings. My device uses 2 micro computers that communicate using Ble. The user wears a BlueFruit Feather device with a pulse sensor, temperature sensor, GSR sensor, and movement sensor on a glove. Meanwhile the alarm clock part is done by a Raspberry Pi device that can sit near the user that has a keypad, buttons and an LCD screen. On the Pi users set the current time which then starts to run, they set and ideal wake up time and a latest wake up time. Roughly one hour before the ideal wake up time the pi tells the fruit to start looking for signals of N1 or N2 stage sleep where it is easiest to wake up as calculated in the program, based on its prior training and learning of that users base levels for the metrics. The fruit analyzes its data and signals for the PI to ring when it detects an optimal wake up spot. If this optimal window does not occur or the signal does not send before the latest wake up time the pi rings at the latest wake up time. Testing confirmed the device's effectiveness in helping people wake up more consistently refreshed, and that its battery life is around 10 and a half hours. A survey also indicates strong interest in a product like mine with 85.5% of responses saying they would be somewhat to very interested. Dream Mornings presents an ideal solution to waking up in the mornings with future research focusing on increasing the depth of analysis and broadening use for at home sleep health tracking.

Awards Won:

Patent and Trademark Office Society: First Award of $500