

PROJECT PROPOSAL - SHEEPCOUNTER

Below document is by Ian Daniher, unless otherwise indicated.

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Synopsis

A wrist-mounted device for the purpose of tracking sleep intensity and duration is being designed with the purpose of interfacing to the popular sleep tracking website yawnlog.com, which boasts [over 9000!] daily users. Based on the principle of [Actigraphy](#), a non-invasive method of monitoring sleep.

Market Sector and Target User Base

This product would be pitched exclusively to yawnlog subscribers, simultaneously providing an interested user group and providing HelloSiloLLC a method for monetization. Yawnlog has a daily user base of [over 9000!] individuals, providing [SheepCounter] with access to a large group of individuals who are interested in tracking and streamlining their sleep cycle. The addition of [SheepCounter] support and new features including an API and YawnLogPRO, offering REM tracking and [alarm-clock functionality](#) could be offered as a subscription-base plan.

Similar Projects

I have conducted a cursory overview of relevant projects.

SleepCycle



SleepCycle is an iPhone application which uses the device's on-board accelerometers to analyze sleep patterns and depth.

EasyWakeup

EasyWakeup

EasyWakeup is an iPhone application which uses the devices on-board accelerometers to determine periods of light sleep, then uses vibratory and auditory alarms to wake one up at optimal times.

SleepTracker



Innovative Sleep Solutions, LLC

Innovative Sleep Solutions is a small business whose primary retail product is a \$179 watch-like device that utilizes accelerometers to analyze sleep patterns and a vibratory and auditory alarm to wake one up at optimal times.

WakeMate



WakeMate is a small business whose primary retail product[not yet released] is a \$50 watch-like device that utilizes accelerometers and interfaces directly to an Apple iPhone "(works on all phones)."¹

What [SheepCounter] is Doing Differently

By offering a low-cost hardware peripheral which interfaces seamlessly with a web app with a solid user base, [SheepCounter] represents a significant opportunity to capitalize upon people interested in sleep

1. clarified with WakeMate - works with all *Bluetooth-enabled* cell phones

informatics, but unable or unwilling to invest in more expensive devices. By offering a system more open than many alternatives, [SheepCounter] can capitalize upon hacker society.

Relevant Patents & Applications

Travis has conducted a cursory investigation of relevant patents.

[US Pat. Application 12431167](#)

A set of therapy parameter values is selected based on a patient state, where the patient state comprises a speech state or a mixed patient state including the speech state and at least one of a movement state or a sleep state. In this way, therapy delivery is *tailored to the patient state*, which may include one or more patient symptoms specific to the patient state. In some examples, a medical device determines whether the patient is in the speech state or a mixed patient state including the speech state based on a signal generated by a voice activity sensor. The voice activity sensor detects the use of the patient's voice, and may include a microphone, a vibration detector or an *accelerometer*.

[US Pat. 7041049](#)

This invention generally relates to *sleep efficiency devices*, and more specifically to a device and method for monitoring a person's sleep patterns through the person's *physiological characteristics*, determining an efficient sleep pattern, establishing a rapport between the person and a sleep guide, and guiding the person through one or more sleep patterns.

Preliminary conclusion: this proposal does not infringe upon any known patents.

Purposed Technical Details

This device would be based off of an accelerometer, with the part selected for high-accuracy in three dimensions with low per-unit cost. A microcontroller would interface between this accelerometer and a wireless transmitter. The microcontroller would be selected for low power requirements, small form-factor, and low per-unit cost, with preference given towards Atmel products. The wireless transmitter would be selected for low power requirements, TTL-stream abilities, and small size, with preference given to items operationally identical to Sparkfun's [sku: WRL-08945](#). The device would be powered off one 3v lithium-ion clock battery.

The computer interface would be based off of a wireless receiver which would be selected for low power requirements, TTL-stream abilities, and small size, with preference given to items operationally identical to Sparkfun's [sku: WRL-08947](#). A USB-capable microcontroller would be implemented, providing a bridge between the serial stream and the host machine's USB port. The part would be selected for TTL-stream abilities, ease of programming, and low per-unit parts cost.

The software interface would take the form of a client applet running in the background, waiting for USB events matching that of a data transfer / connection from the device. This software application could be written in Python, greatly simplifying the needed code.

Basic Fiscal Analysis

Based upon the target BOM price-point and wild guesses for retail value and potential market saturation, a profit-margin on hardware sales could be approximately 50%. With [over 9000!] captive customers via YawnLog, profits could exceed 9kUSD within one year.²

Next Steps

Within two months, a full-function hardware prototype will be created, with a preliminary PCB and case design. This prototype will have a target BOM of under \$15 at 1k parts. This prototype will interface, via reverse-engineering or a yet-undeveloped API, with yawnlog.com

Proposed Additions

- creation of API for yawnlog.com
- integration with Google voice for text/call-based alarms
- interface with iTunes and winamp api for music-based alarm clocks
- a rudimentary EKG could detect heart rate, enhancing the device's capabilities of making accurate judgements
- extensible API could be used to relate Facebook online times with amount of sleep -AF.
- inductive charging could be awesome
- [woot](#) device opening -EK

2. This is my best estimation via 1% market saturation within one year. Can someone with more experience in E! & business do a more detailed analysis? -ITD