

C.S. CAPSTONE

Advanced Software Engineering

Summary

SomnoHealth Incorporated, a Golden-based consumer health startup, wants *your* help with an interesting "big data" project!

Start here:

www.GetEverSleep.com

EverSleep brings in-hospital laboratory grade sleep technologies directly to the consumer - to monitor and improve sleep.

Sleep measurement happens in our new sleep wearable device, and that data is BTLE transmitted to our mobile phone app. Inside the app we perform complicated analyses and deliver clinically based sleep improvement coaching directly to the user.

Our server collects anonymized data every morning from our users and beta testers - 15,000 lines of data per user, per night. *We've got lots of data, and lots more coming in...*

We need your help to slice and analyze this sleep data!

Dashboard Project:

We already have a "dashboard" tool that lets us "look" into the server and retrieve one user's data, but only one night at a time, and in a very difficult to interpret RAW format. We want easily human readable output from our "dashboard".

The main project is to build new features into this "dashboard" tool.

These tasks are in order of priority, **and** in order of complexity. How many can we finish?

1. Search
 - 1.1. We'd like to be able to search on a specific user ID to find all their nights
2. Generate a human readable reports
 - 2.1. Print a "plain English" summary of the user's night
 - 2.2. Calculate how many reports came in each morning
3. Generate some graphics
 - 3.1. We'd love a graphic hypnogram for each user (Look it up!)
 - 3.2. Can we get a "pie chart" for the user's "stage" of sleep each night?
4. Trends Per User
 - 4.1. We'd like to see a user's improvement over several weeks for snoring, time in bed, breathing interruptions, pulse rate excursions, motion arousals, out-of bed events., etc. Are they getting better sleep?
5. Trends across all users
 - 5.1. What happened to bedtimes and wake times during the Daylight savings time shift? Are Spring allergies causing insomnia problems? Do people have more "can't get to sleep" type insomnia on Sunday nights?
6. Machine Learning?
 - 6.1. Given a specific user, can you predict which remedies will help them the most?
 - 6.2. Other predictions?

Schedule:

Sprint 1: Intro, definitions, access to tools
Sprint 2: Specific requirements, begin work
Sprint 3: Implementation, Check-in
Sprint 4: Implementation, Check-in, Course Correct
Sprint 5: Implementation, Check-in, Final Update
Sprint 6: Final Tweaks, Presentation

Technologies:

- JSON Data
- AWS Servers
- JavaScript / Node JS (Current Dashboard)
- Relational Database (SQL or clone)
- GITLAB Repository
- Agile Tool = Taiga or GIT or Trello or ???
- Machine Learning? AI? TensorFlow? Google BigData?
- See photos and a sample file below!

Specifics:

- Work from home, from school, or on-site in North Golden
- No required "work hours" (i.e. 9-5)
- Guidance from senior engineers
- Architecture & Technology are defined, but you'll have leeway to bring new technology
- Potential Internship after the project is over
- Team Size 3-5

Contact:

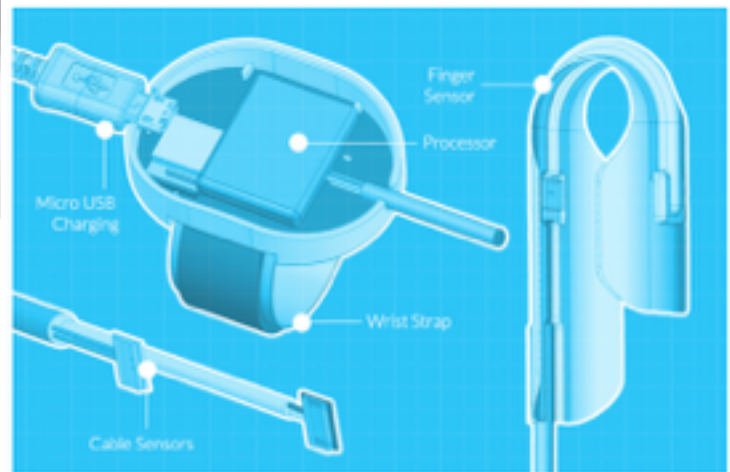
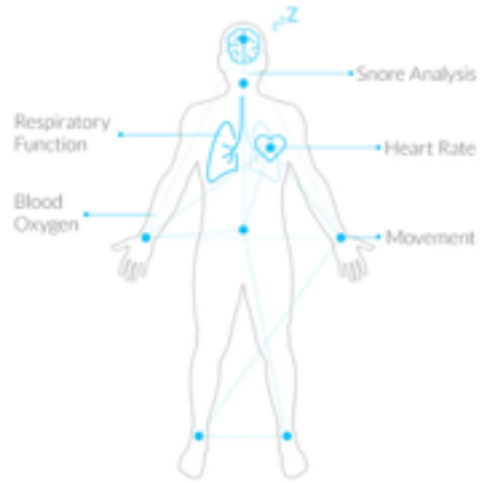
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p.s. If anybody wants to purchase an EverSleep from our website... here is a secret code for the employee \$50 discount: SAVE50

www.GetEverSleep.com

What's Different About EverSleep?

EverSleep uses advanced **sleep-lab technology** to provide the data and coaching you need at home.



```

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