

Product Portfolio

Aashi Shah

Preface

Engineering is my way of seeing how far an idea can go. I follow a problem as it becomes an idea, kneading through its layer like dough, until what's left is something that works for everyone.

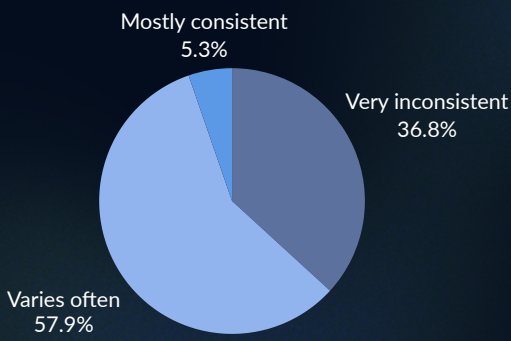
This portfolio highlights a selection of those finished loaves-- cross-disciplinary projects spanning product design, embedded systems, software development, and data-driven engineering. Each one represents a different challenge, but all share the same goal: building thoughtful solutions to everyday problems.

On the following pages, you'll find a brief overview of each project, its context, and key outcomes. While this portfolio captures many of the projects that have shaped me, some details and ongoing work have been intentionally left out. If something sparks your curiosity, reach out and I'd be happy to share more.

Dozed

AUG 2025 - DEC 2025

Dozed is a holistic sleep system built to support healthier sleep habits. Alongside my co-founder, I designed a wearable sleep tracker, a multi-purpose bedside alarm, and a companion app.



THE NEED

We surveyed young adults nationwide when asked about sleep routines, **94.7%** described their sleep schedule as varying or inconsistent.

The National Institutes of Health reports that **70 MILLION** Americans suffer from a sleep disorder and **29%** experience nonrestorative sleep.

THE SCIENCE

4-6

sleep cycles per night

100

mins. approximately per cycle

slow

heart rate corresponds to deeper stages



Waking during deep sleep can cause sleep inertia, resulting in grogginess, reduced alertness, and slower cognitive performance.

However, by monitoring heart rate throughout the night, sleep stages can be estimated to identify optimal wake windows.

THE GAP

Current Practices

loud, abrupt phone alarms

light-based alarm lamps

wearable sleep tracker

manual habits: snoozing, multiple alarms, etc.

Limitations

often jarring; waking abruptly regardless of sleep stage which can worsen grogginess.

fixed-time, not synchronized to sleep cycle

don't usually integrate with environmental cues (light/sound)

prolong grogginess instead of relieving it

OUR SOLUTION

Combining optimal wake windows, immersive sleep environments, and personalized insights to create a holistic, all-in-one sleep solution →

COMPONENTS



MAX30102 Heart Rate Sensor



Arduino Microcontroller



LiPo Battery Power Module

FINAL PRODUCT



Slumber Sock

Tracks heart rate and HRV throughout the night to estimate sleep stages and identify the optimal wake window.



Accurate Heart Rate Monitoring



Sleep Stage Detection

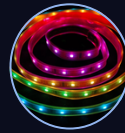


Comfortable Compression Fabric

COMPONENTS



Raspberry Pi Processor



LED Light Strip Adaptive Lighting



JBL Speaker Immersive Sound

FINAL PRODUCT



The Beacon

A bedside module that uses adaptive lighting & immersive soundscapes to create calmer evenings & gentler mornings.



Adaptive Lighting



Immersive Soundscapes



Gentle Wake Experience

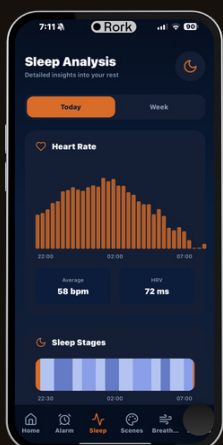
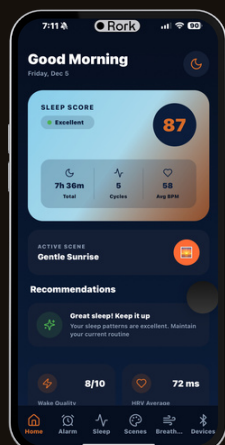
DATA INPUTS



From Slumber Sock
Heart Rate • HRV • Sleep Stages • Wake Window



From Beacon
Light & Sound Events • Environment • Adaptive Alarms • Sleep Rituals



Companion App

Brings everything together with powerful insights and personalized recommendations.



Sleep Insights



Personalized Recommendations



Meditative & Yogic Practices



Breathing Exercises

OUTCOMES

- ◆ Awarded \$1,000 at the Mottier Innovation Competition
- ◆ Designed to be manufactured for under \$60 per unit
- ◆ Combined embedded systems, product design, and mobile experiences into one cohesive ecosystem
- ◆ Presented to Bradley Mottier, former CEO of GE Aviation Systems