

## CREATING A BRIDGE BETWEEN THE PATIENT AND SLEEP PSYCHOLOGIST

- Shift workers, such as nurses, doctors, and transportation workers, do not work traditional hours and make up 25% of the American workforce. Members of this group are often plagued by shift work sleep disorder, which prevents them from maintaining a typical sleep schedule.
- The novelty of this project lies in its direct collaboration with a provider, Dr. Dietch, to drive development and craft a solution that integrates her existing treatment principles. Incorporating the concerns of leading sleep psychologists, Lavender addresses key issues in shift work disorder treatment by using optimization modeling and data analytics to generate recommended sleep schedules based on digital sleep diary data.
- The digital sleep diary aims to consolidate a shift worker's sleep data into an easily-accessible application, so that sleep psychologists can make data-driven decisions on the effectiveness of an assigned sleep schedule. However, the heart of this project lies in the sleep schedule generation feature. This involves generating optimal sleep schedules while taking into account sleep variables such as sleep inertia, a temporary grogginess that typically occurs after a sleep episode, and other patient variables such as work shifts and daytime activities.
- Lavender's overarching goal is to aid providers in treating patients and to increase accessibility of treatment for those patients. Our collaboration with Dr. Dietch ensures that we create a solution that attacks the root causes of the current treatment process and serves as a foundation for future sleep disorder platforms.



# Lavender: Shift Work Sleep Platform

## Assisting Individuals with Shift-Work Sleep Disorder in Achieving Quality Sleep

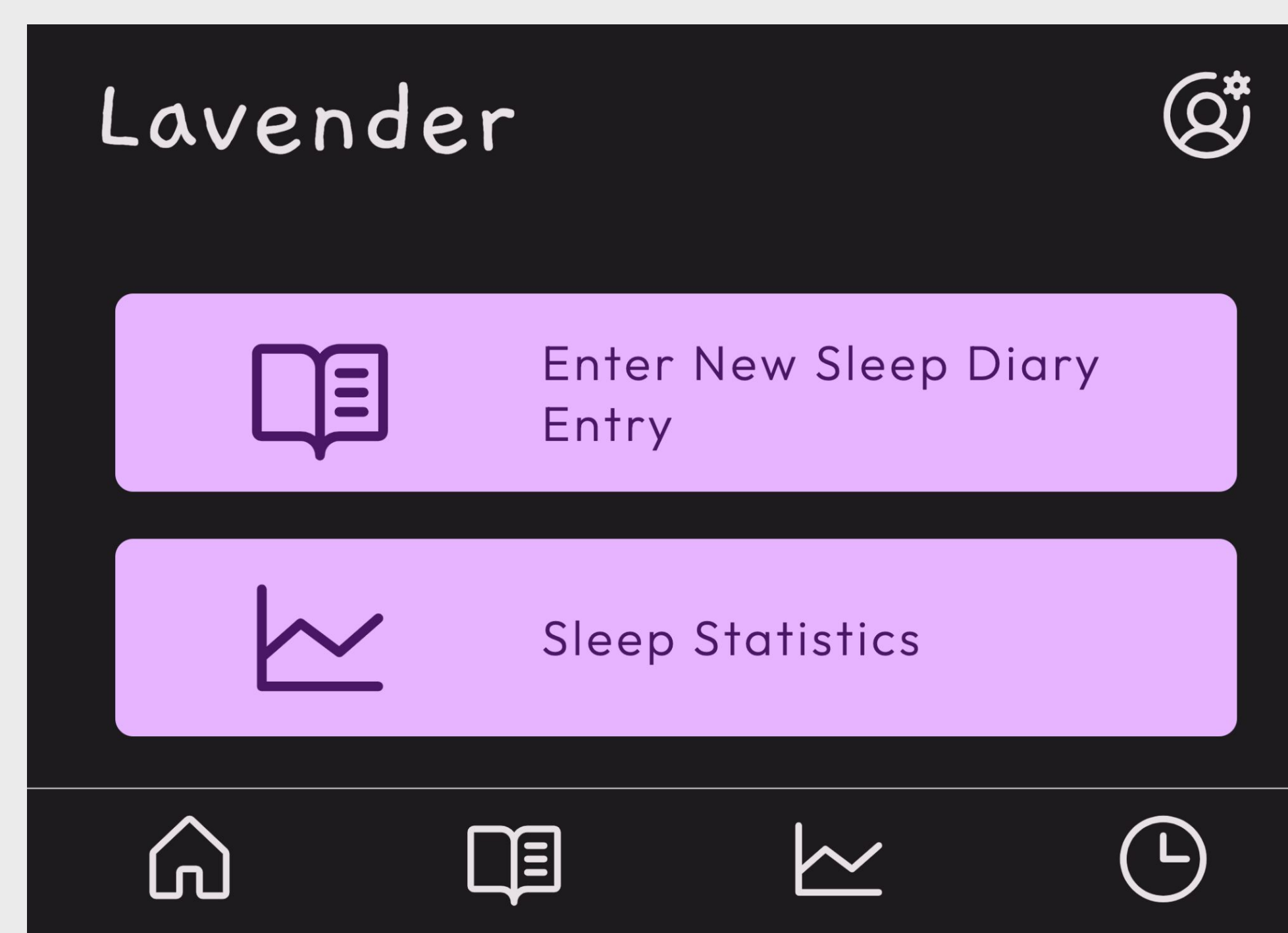


Figure 1. Lavender Homepage in Patient View

### LAVENDER'S FEATURES

- **Optimal Sleep Schedule Generation Algorithm.** The algorithm to develop sleep schedules is based on current design principles that the provider (and stakeholder) uses with her own shift work patients.
- **Sleep Diary.** The patient describes their sleep episodes. The sleep diary is based on the Consensus Sleep Diary, with minor adjustments to fit the goals of the project.
- **Sleep Statistics.** Data visualization is a visual and mathematical comparison between the shift worker's actual sleep diary data and the provider's assigned sleep schedule, but can include other summary statistics such as average time spent asleep per 24-hour period.

### THE FUTURE OF LAVENDER

- The idea for Lavender was created by the Lavender team, namingly Ragini Dindukurthi, after participating in one of Dr. Dietch's courses. Lavender grew to be a Capstone project for the team, and was created in Fall 2023.
- After the 2023-2024 school year ends, Lavender will continue to be maintained by Dr. Dietch's Sleep Health Assessment, Intervention, and Dissemination lab, as well as future Computer Science Capstone students through the Capstone courses at Oregon State University.

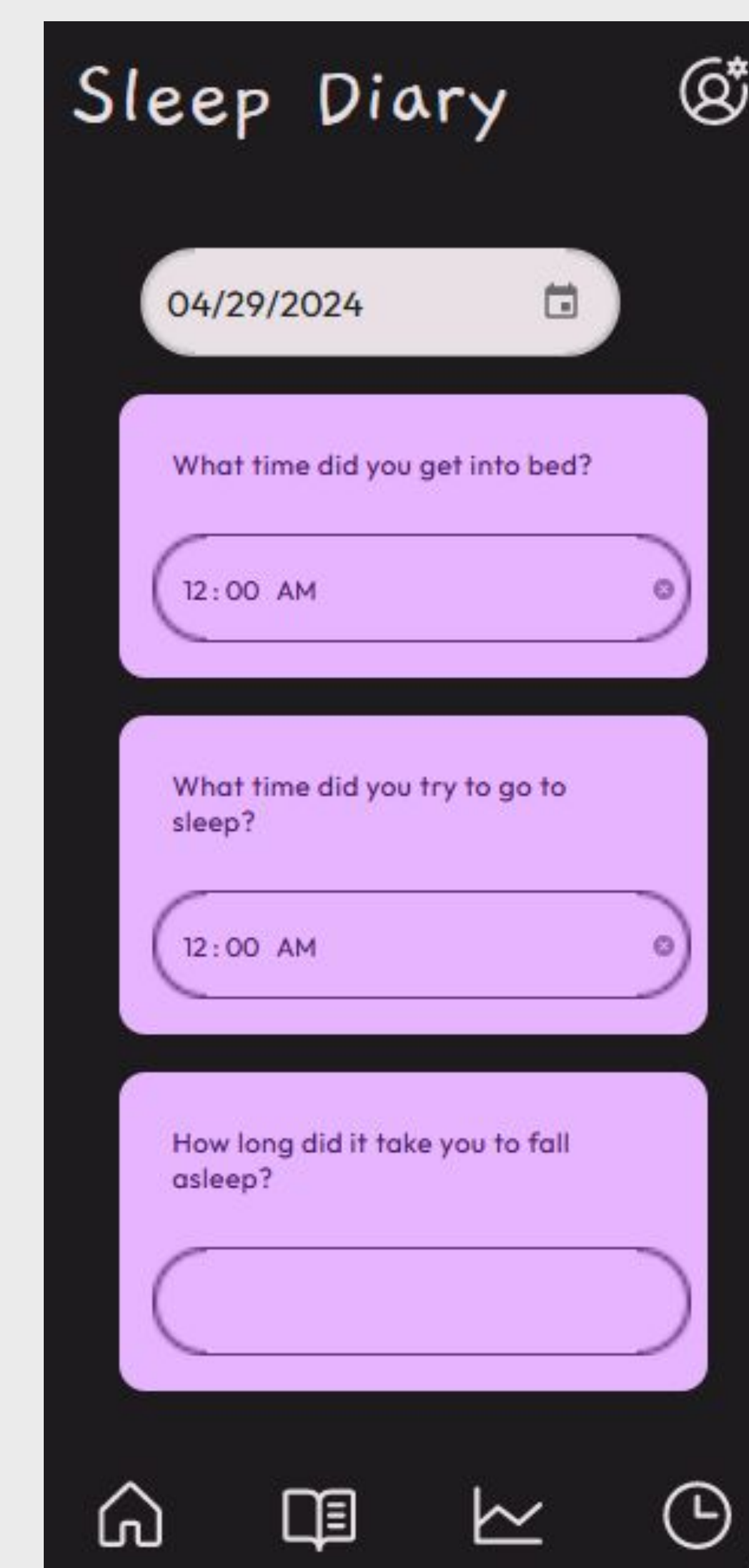


Figure 2. Sleep Diary Entry Interface

### ACKNOWLEDGEMENTS

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