



Development and Usability Testing of a Digital Memory Notebook

Jenna Beaver¹, Christine McManus², Kaylee Spangenberg¹, Jessamyn Dahmen³

¹Department of Psychology, ²College of Education, ³School of Electrical Engineering and Computer Science

Introduction

- ◆ Prior studies suggest that a memory notebook can be helpful in assisting individuals with scheduling and completing everyday activities
- ◆ Study goal: Develop a tablet-based user-friendly digital memory notebook (DMN) that will:
 - ◆ Assist individuals in scheduling, completing, and logging everyday activities
 - ◆ Help compensate for declines in cognition
 - ◆ Function both as a standalone tool and as part of a smart environment system

Methods

Participants

- ◆ 8 older adults (Age: $M = 71.25$ years, $SD = 13.13$; Education: $M = 17.13$ years, $SD = 2.80$)

Materials and Procedures

- ◆ Iterative design approach
- ◆ Demographics including age and education were gathered
- ◆ Participants completed three types of tasks after a brief tutorial of the app
- ◆ Measures:
 - ◆ Technology Use and Comfort Questionnaire
 - ◆ Scheduling Tool Use Questionnaire
 - ◆ Post-Study System Usability Questionnaire (PSSUQ)
 - ◆ After Scenario Questionnaire (ASQ)
 - ◆ Open-ended prompts

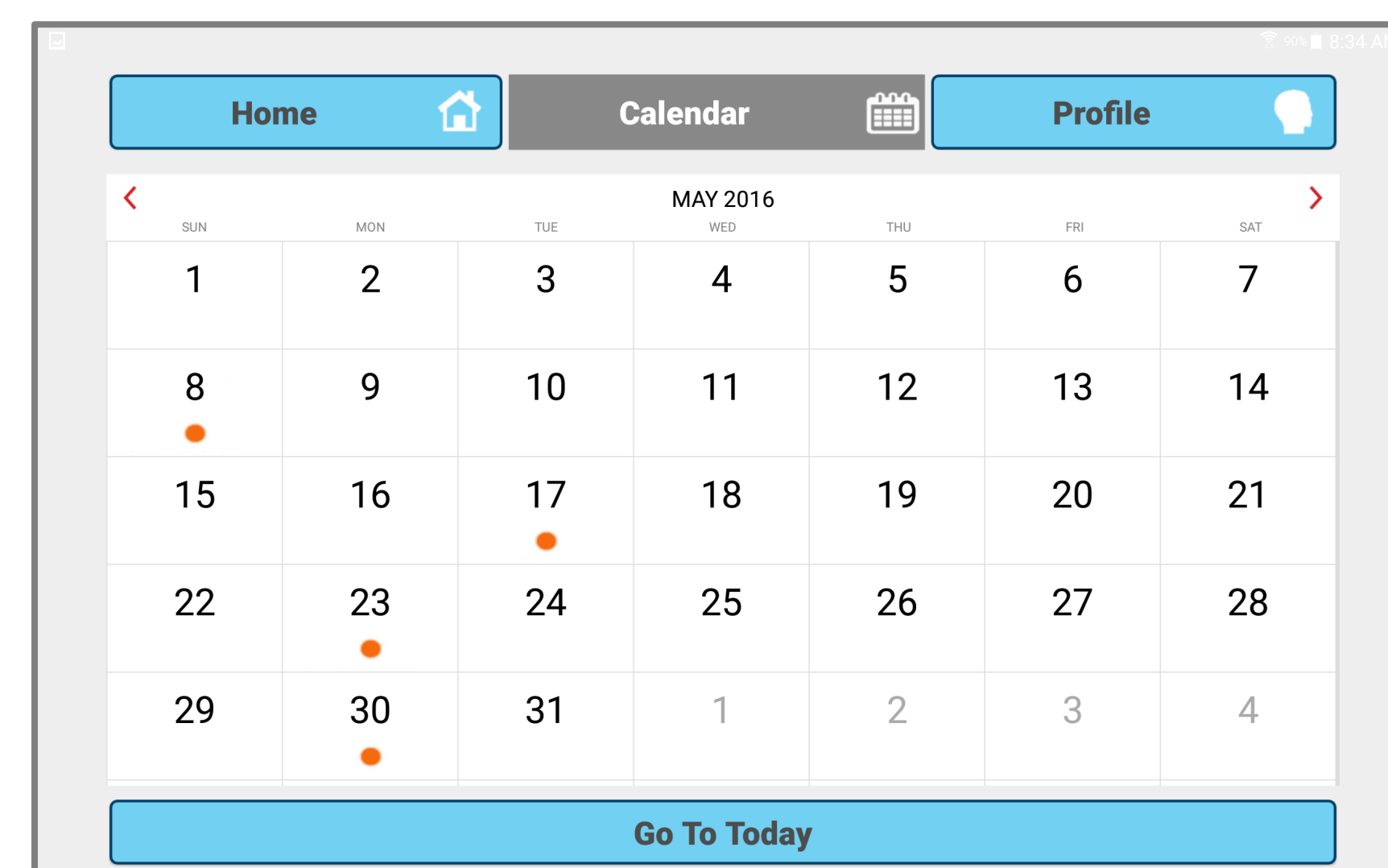
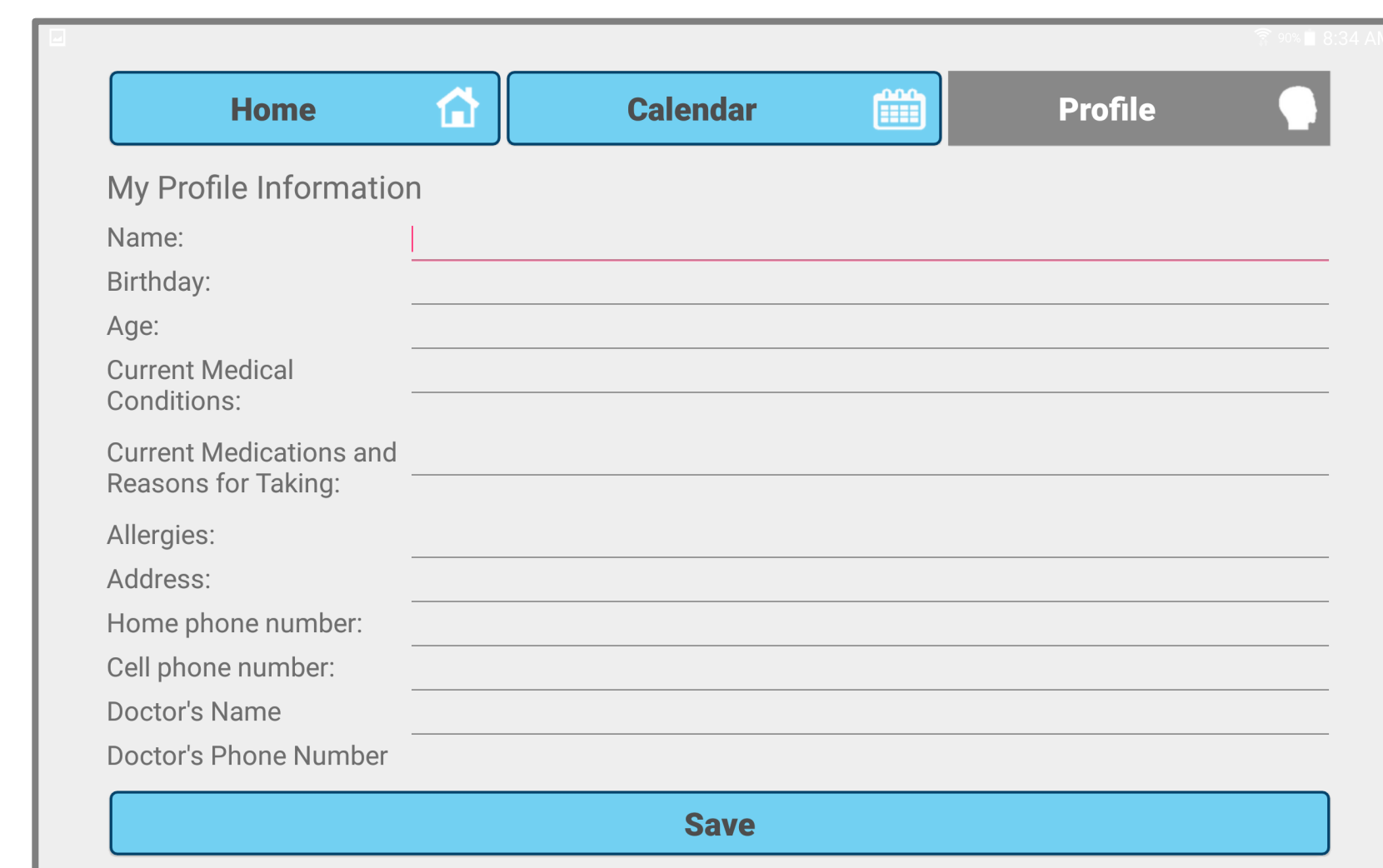


Figure 1. Profile and Calendar views

User Interface (UI) Design Considerations

- ◆ Font size and type
- ◆ Color scheme
- ◆ Button labels
- ◆ Date and time selection interface

Results

- ◆ 75% of participants reported using technology and scheduling tools at least 3-5 times per week
- ◆ 87.5% of participants said they would use the app if it was available

	Strongly Satisfied			Strongly Dissatisfied			
	1	2	3	4	5	6	7
Adding Event							
Ease of completing task	37.5% (3)	50% (4)			12.5% (1)		
Time to complete task	37.5% (3)	50% (4)		12.5% (1)			
Checking for Event							
Ease of completing task	62.5% (5)	25% (2)			12.5% (1)		
Time to Complete Task	62.5% (5)	25% (2)	12.5% (1)				
Adding to Profile							
Ease of completing task	50% (4)	12.5% (1)		25% (2)	12.5% (1)		
Time to Complete task	50% (4)	37.5% (3)			12.5% (1)		

Table 1. Frequency of responses by percentage and number (in parenthesis) to questions about task completion on a Likert scale from 1 (Strongly Satisfied) to 7 (Strongly Dissatisfied) from the After Scenario Questionnaire (ASQ)

	Strongly Agree			Strongly Disagree			
	1	2	3	4	5	6	7
Overall, I am satisfied with how easy it is to use this system	50% (4)	37.5% (3)			12.5% (1)		
It was simple to use this system	25% (2)	62.5% (5)		12.5% (1)			
It was easy to learn to use this system	62.5% (5)	37.5% (3)					
Whenever I made a mistake, I could recover easily and quickly	25% (2)	62.5% (5)		12.5% (1)			
I believe I could become productive quickly by using this system	50% (4)	25% (2)	12.5% (1)				12.5% (1)

Table 2. Frequency of responses by percentage and number (in parenthesis) to statements about overall experience with the app on a Likert scale from 1 (Strongly Agree) to 7 (Strongly Disagree) from the Post-Study System Usability Questionnaire (PSSUQ)

- ◆ Based on open-ended feedback, the following changes are recommended for the second iteration:
 - ◆ Adding alarms and prompts for events
 - ◆ Implementing specific buttons for task title and description in the Add Event dialogue page
 - ◆ Increasing salience of important buttons (i.e., "Save") by changing color or animation
 - ◆ Adding a "Notes" page as a fourth primary function

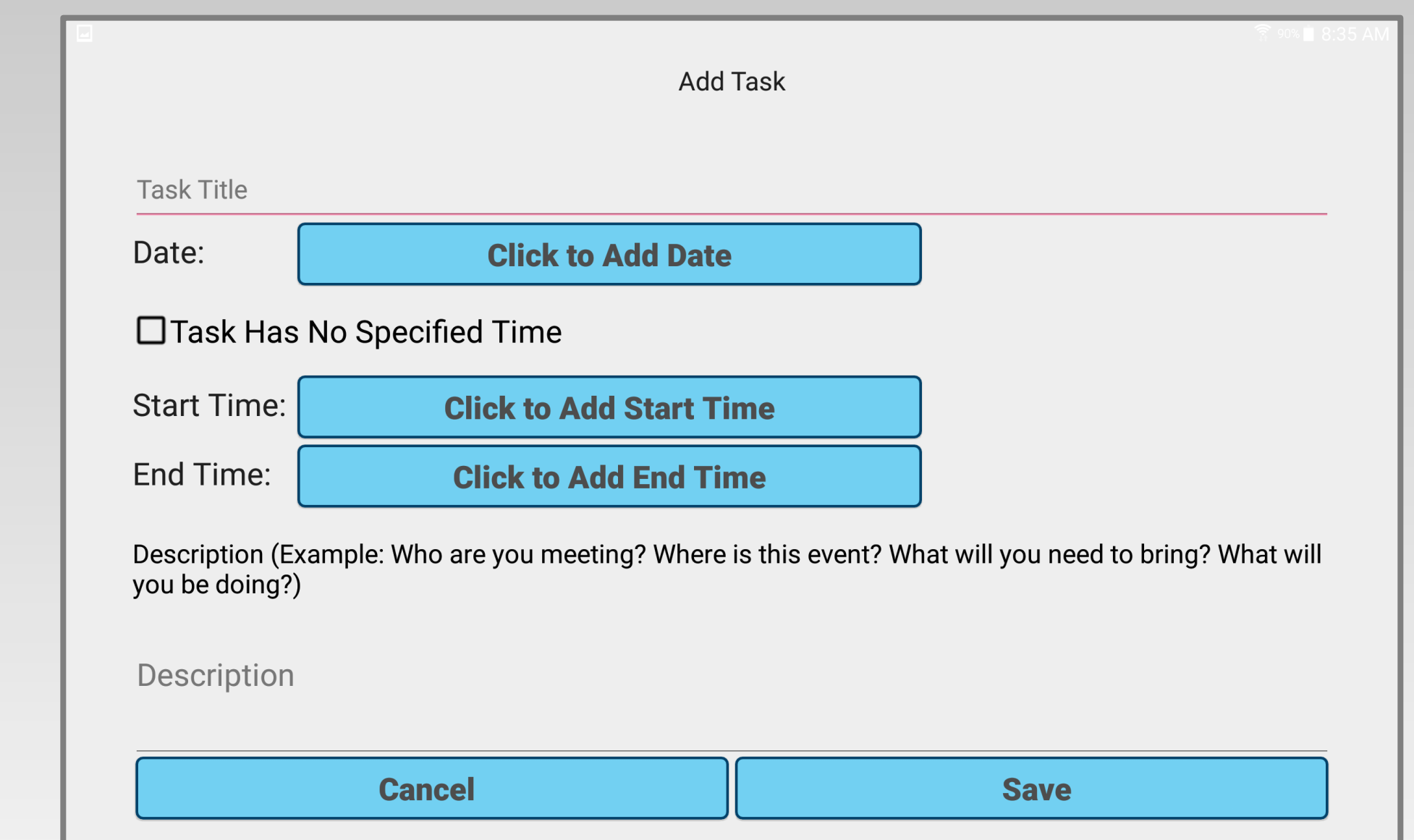
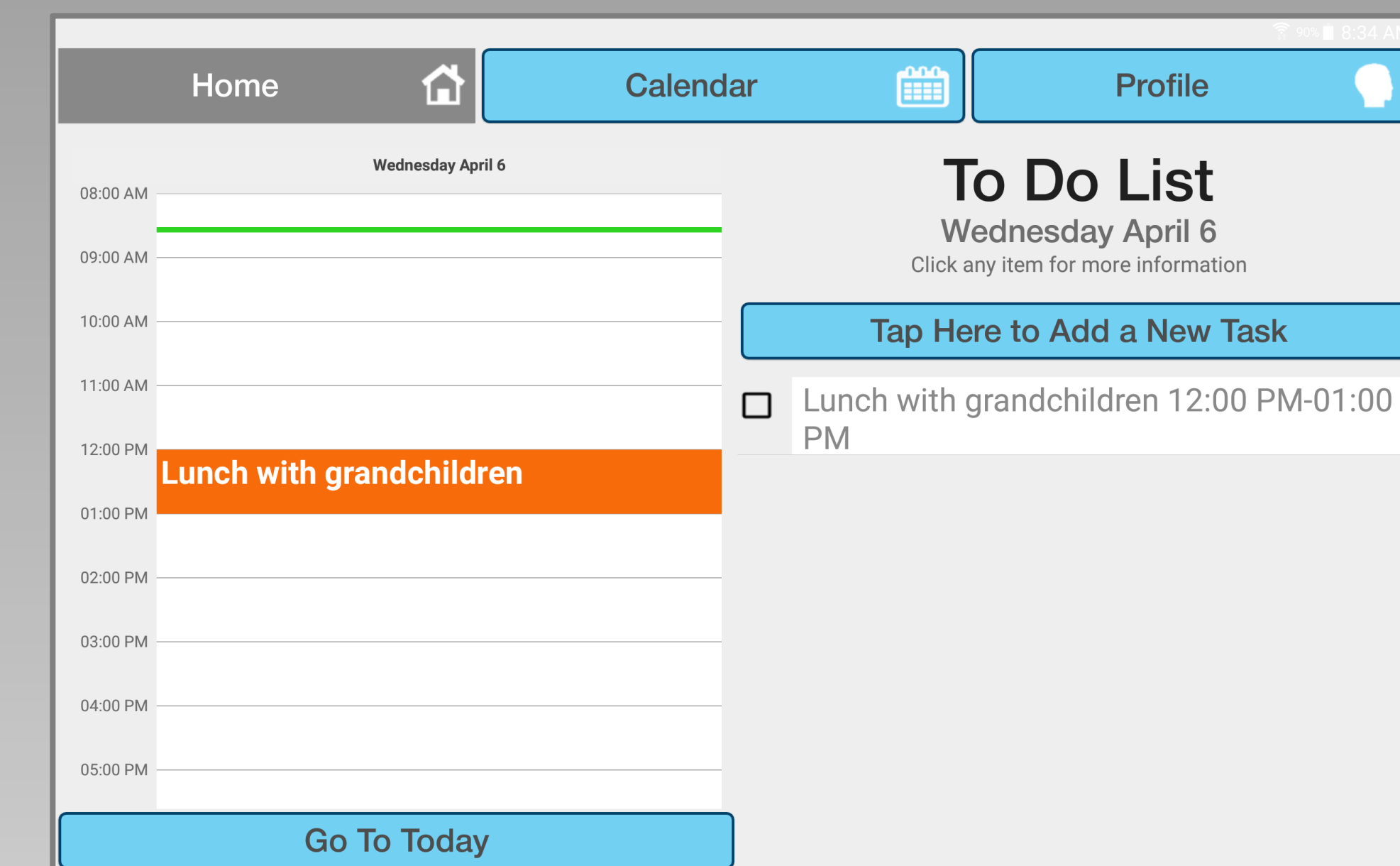


Figure 2. Home page and Add New Task dialogue box

Conclusions and Future Work

- ◆ Overall, participants were very satisfied with the app and provided valuable feedback about possible modifications for future development
- ◆ Participants were satisfied with the UI design aspects chosen by our team
- ◆ Future directions for the project include:
 - ◆ Translation of app into iOS format
 - ◆ Integration into smart environments to use sensor data to populate and track DMN activities, and deliver reminders/prompts at ideal times
 - ◆ Distribution of app via iOS and Android app stores for broad use in the general population

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