Major Qualifying Project
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Agenda

- Problem Statement
- Project Goals and Objectives
- Application Demo
- Methodology
- System Architecture & Implementation
- Results and Conclusions
- Recommendations
Problem

- Low-adherence to GWG guidelines

<table>
<thead>
<tr>
<th></th>
<th>Normal Weight</th>
<th>Overweight</th>
<th>Underweight</th>
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</thead>
<tbody>
<tr>
<td>Above target</td>
<td>4.3%</td>
<td>24.1%</td>
<td>-</td>
</tr>
<tr>
<td>Below target</td>
<td>10.4%</td>
<td>-</td>
<td>51.2%</td>
</tr>
</tbody>
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- Current paper book solution
  - Tedious
  - Error prone
  - Adherence is difficult
Use mobile technology to:

- Improve availability of information
- Automate manual processes
- Reduce strain on patient and provider
- Increase motivation and adherence to guidelines

Our Solution: Mobile Self Help Tool

- Self-care
- Timely feedback
- Instant access to information
- Customization
Solution Overview

- Wellness Tracking
  - Weight
  - Activity
  - Food Intake
- Chart Progress and Give Feedback
- Motivational Reminders
- Information Library
Video of Application

- http://www.youtube.com/watch?v=VE9LiJxiRY4
Methodology

Software Development Methodology

- Scrum
  - Product backlog
  - Sprints (6)
  - Weekly meetings

Evaluation methodology

- Medical Professionals
  - Medical Research
  - Medical Expertise
- Patients
  - Focus groups (2)
  - Interviews (3)
- UI Evaluation
- Desired features
Sprints (1-3)

Sprint 1 – Oct 26th ~ Nov 8th
   Application UI
   Reminder Component

Sprint 2 – Nov 9th ~ Nov 23rd
   Database Components
   Weight tracking

Sprint 3 – Nov 29th ~ Dec 14th
   Nutrition tracking
   Activity tracking
Sprints (4-6)

Sprint 4 – Jan. 17\textsuperscript{th} ~ Jan 28\textsuperscript{th}
  - Feedback component
  - Information Library

Sprint 5 – Jan. 29\textsuperscript{th} ~ Feb. 18\textsuperscript{th}
  - Tracking Components
  - Information Library

Sprint 6 – Feb 19\textsuperscript{th} ~ Mar 4\textsuperscript{th}
  - Bug fixes
  - UI Polishing
System Design

Model  \[\rightarrow\] Controller  \[\rightarrow\] View
Some title1

Some title2

Some title3

Pre-Pregnancy BMI

Week #

Calculate GWG Trajectory

GWG

Feedback Engine

You care gaining too much weight!

You are doing great!

You are not gaining enough weight!
Food Feedback Engine

BMI

Get recommended amount of fruits, vegetables, grains

Daily Food Intake

>= x cups of vegetables

No

You should eat more vegetables. Give some examples.

>= x cups of fruits

No

You should eat more fruits. Give some examples.
You are doing great! Keep it up!

You should try exercising more!
Final Products

- Mom-O-meter Android application
- Source code and documentation
- User manual
- Final report
- AMIA Poster
Results and Conclusions

• Developed a fully functional Android application
• Developed measure to assess general acceptance of application usability and design
• Conducted focus groups and interviews to generate feedback, future development possibilities and recommended changes
• Built the framework for a more comprehensive pregnancy application
Recommendations

- Further test the application to evaluate the effectiveness (i.e. clinical trials)
- Expand feature set
  - More customizable
  - Wellness data reports
  - Integration with provider information systems
- Evolve the nutritional component
- Turn into a more comprehensive pregnancy application
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Questions and Discussion