

mAMIA: mHealth Dashboard to Support Pregnant Women's Health Information Seeking and Emotional and Social Wellbeing

Student Design Challenge

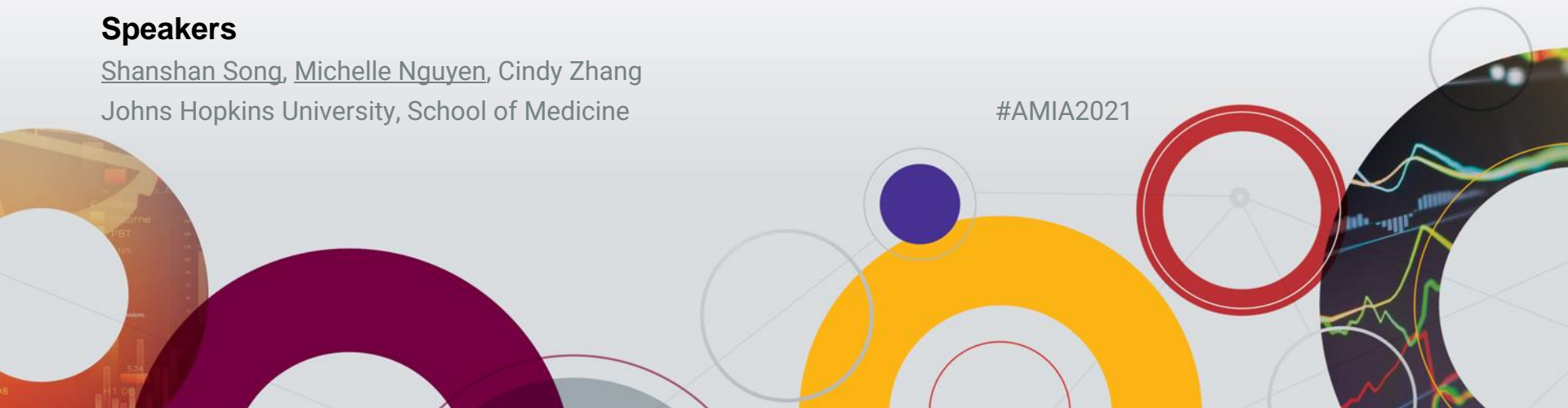
Session Number: 73

Speakers

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#AMIA2021



Disclosure

Shanshan Song, Michelle Nguyen, and Cindy Zhang have no relevant relationships with commercial interests to disclose.

Use Case

Jane is a first-time pregnant woman who wants to know how many hours other pregnant women spend on walking during the second trimester, and searches “recommended walking hours”.



90+% of pregnant women

use digital sources to supplement their maternal healthcare¹

85%

responded that they used digital sources for information seeking²

60+%

responded that they used digital sources for emotional and social support²

1. Lagan BM, Sinclair M, George Kernohan W. Internet Use in Pregnancy Informs Women's Decision Making: A Web-Based Survey. Birth. 2010;37(2):106–15.
2. Smith M, Mitchell AS, Townsend ML, Herbert JS. The relationship between digital media use during pregnancy, maternal psychological wellbeing, and maternal-fetal attachment. PLOS ONE. 2020 Dec 16;15(12):e0243898.

POPULATION

Pregnant or expectant women

NEEDS









- Health Information Seeking
- Social and Emotional Support

DEFINITION OF CHALLENGE

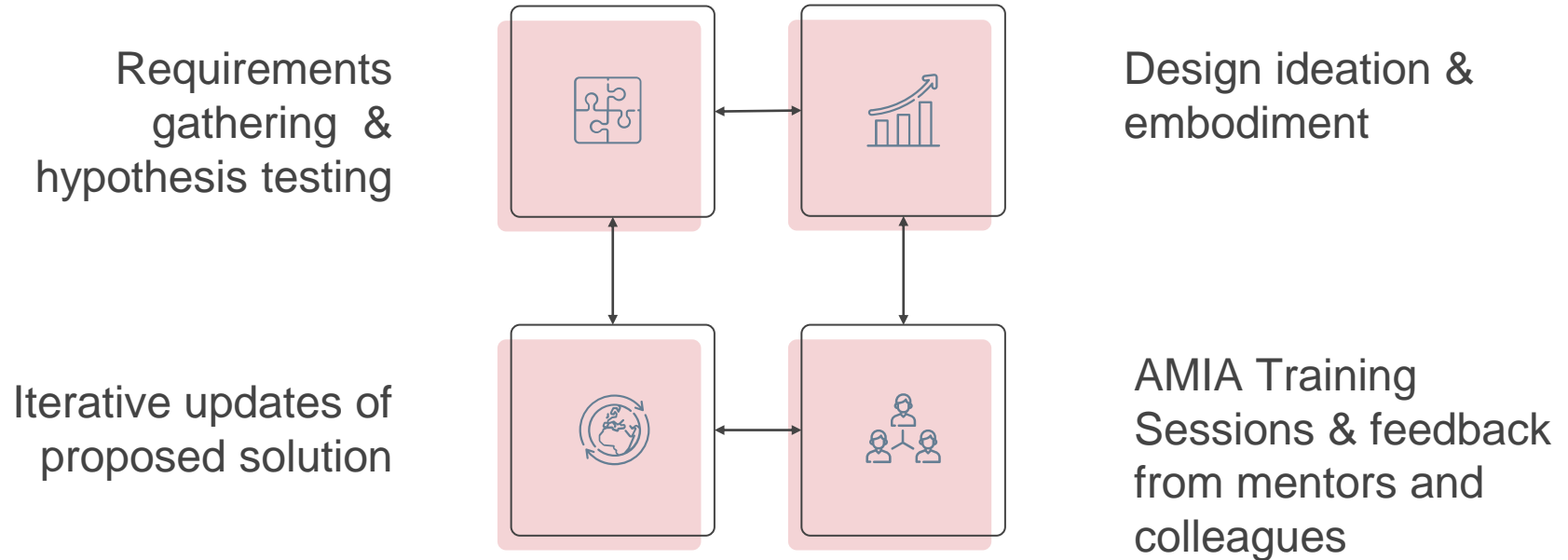
To design an informatics solution for pregnant or expectant women to access reliable health information and provide social and emotional support.

Proposed Solution & Significance



	MAMIA	FITBIT JOURNAL APP
TRUSTED HEALTH PROFESSIONAL GUIDELINES		
WEARABLES		
FREE-TEXT JOURNAL ENTRY		
NLP ANALYSIS SUPPORT		

Design overview



Requirements gathering: functional and non-functional

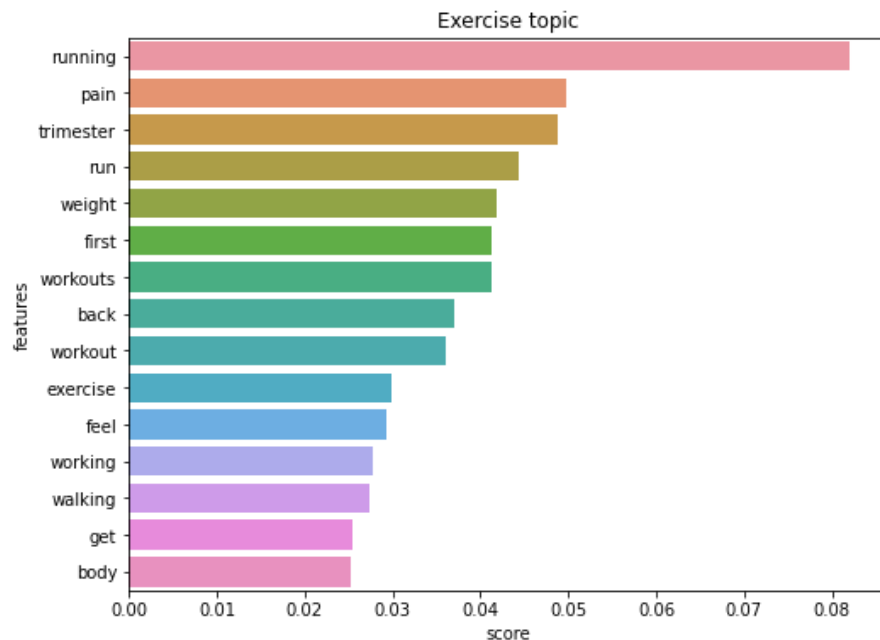
FUNCTIONAL REQUIREMENTS

- Literature review
- Online communities

NON-FUNCTIONAL REQUIREMENTS

- Extracted behavior patterns
- Use case

Requirements gathering: forum analysis



Figures 1. Top 15 words for K-means cluster, reflecting exercise



Figure 2. Word cloud generated from K-means exercise cluster.

Requirements gathering: hypothesis testing

3 HYPOTHESES

🎯 online community
information on app

🎯 trusted health
recommendations

🎯 value anonymity



01

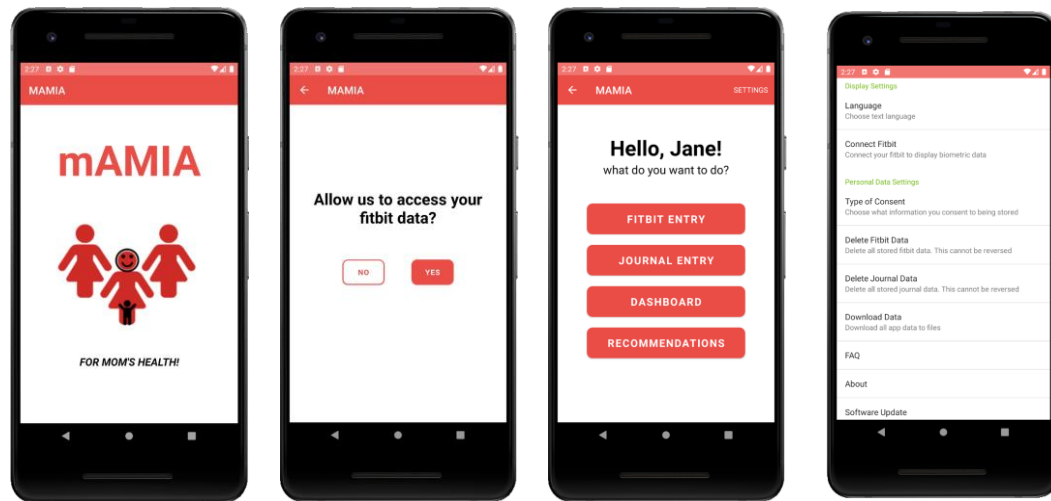
**QUALTRICS
QUESTIONNAIRE**

02

**STAKEHOLDERS
INTERVIEW**

Design description & App preview

App walkthrough



[Code hosted on Github](#)

CONSENT



FITBIT ENTRY



JOURNAL ENTRY



ANALYSIS



DASHBOARD



RECOMMENDATIONS



[App walkthrough](#)



CONSENT



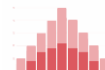
FITBIT ENTRY



JOURNAL ENTRY



ANALYSIS



DASHBOARD



RECOMMENDATIONS



Design description

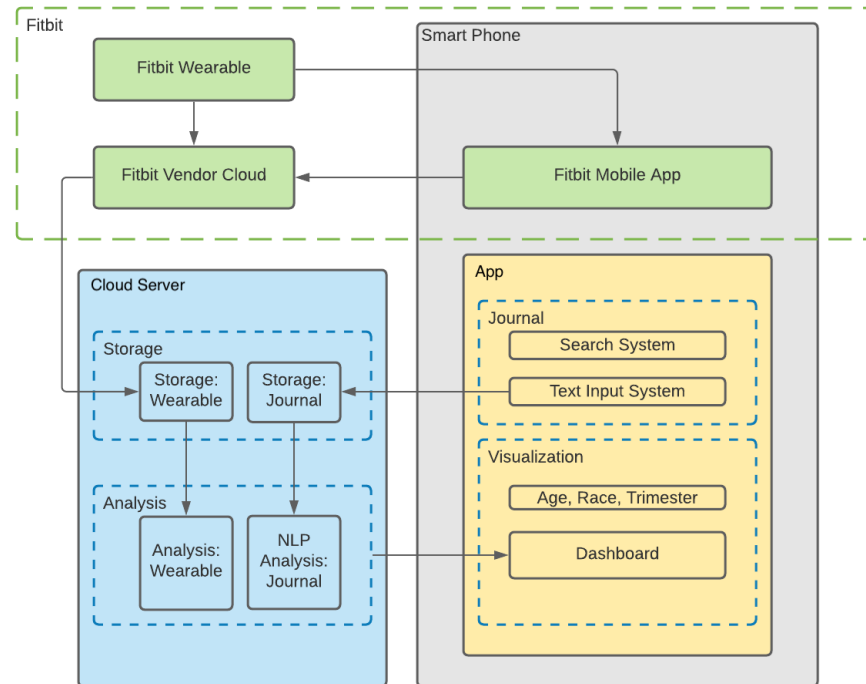


Figure 3. Proposed System Architecture.

Implementation and evaluation plan

INTERNAL EVALUATION

- Heuristic review
- Usability test

EXTERNAL EVALUATION

- Qualitative semi-structured interviews and focus groups

SUCCESS CRITERIA, METRICS

PERFORMANCE

App crashes, loading time

USAGE

Daily active users

USER ENGAGEMENT

Session length, Session interval, Retention rate

USER SATISFACTION

Ratings from app store, Surveys

ACQUISITION

Number of successful downloads, Number of download from a certain source

PROVIDER EVALUATION

Ratings from surveys

- Continue **requirements analysis**
- Conduct **topic modeling analysis of forum posts and literature** for the app search engine
- Finalize the **app prototype** to satisfy **heuristic evaluation**



mAMIA...

- satisfies pregnant women's self-identified emotional/social and information needs
 - **behaviors from the community**
 - **recommendations from trusted professional resources**
- is currently a high-fidelity prototype



Acknowledgments

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 - App development - **Cindy Zhang**
 - [TIRI Lab](#) directed by **Dr. Casey Overby Taylor**



Thank you!

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1. Lagan BM, Sinclair M, George Kernohan W. Internet Use in Pregnancy Informs Women's Decision Making: A Web-Based Survey. Birth. 2010;37(2):106–15.
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