Masters Dissertation

"Smart Cafeteria" Adaptive And Interactive Mobile Application

Supta Richard Philip [1]

Supervisor: Professor Antonella De Angeli

[1]M.Sc. in Computer Science
Department of Information Engineering and Computer Science
University of Trento, Italy.

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Outline

1. Problem Statement
   - Scenarios
   - Objective
   - Proposed Solution
2. Analysis
   - Stakeholders
   - Functional & Non Functional Requirements
   - Data Gathering & More Requirements
3. Design
   - Desktop Prototype
   - Mobile Prototype
4. Usability Evaluation
   - Evaluation Methodology
   - Evaluation Result
5. Conclusion

Scenarios and Problem

Hungry Students and Busy Professors

- How to skip the long queue.
- How could know Today's menu.
- How could find appropriate menu(calorie, price).
- Collaborate and share feeling.
- How technology can help.

Objective

Services:

- Cafeteria Queue Skipper.
- Menu Finder.
- Menu Suggester and Dieting Adviser.
- Customized Menu creator.
- Lunch with Friends.

System should:

- provide online cafeteria services.
- provide dieting services to users.
- provide social collaboration services.

Proposed Solution

Create "Smart Cafeteria"

supported by

- web 2.0 system
- Smartphone application.

"Smart Cafeteria"

application should be

- Interactive.
- Adaptive.

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Stakeholders

Stakeholders

- System Users.
  - Students.
  - Professors.
  - Researchers.
  - Universitys Administration Officer.
  - Universitys Technical Staff.
- System Administrator.
  - Cafeteria Staffs.

Functional & Non Functional Requirements

Functional & Non Functional Requirements

Functional Requirements

- 42 Functional Requirements

Non Functional Requirements

- Usability.
- Internationalization.
- Portability.
- Adaptability.
- Safety and security.

Data Gathering & More Requirements

Data Gathering & More Requirements

- Focus Group - 7 participants.
- Questionnaires.

Outcomes

- "Smart Cafeteria" is usefull application.
- Found 5 more functional requirement.
- Design UML (4 Use Case, Class Diagram, 4 Activity Diagram.)

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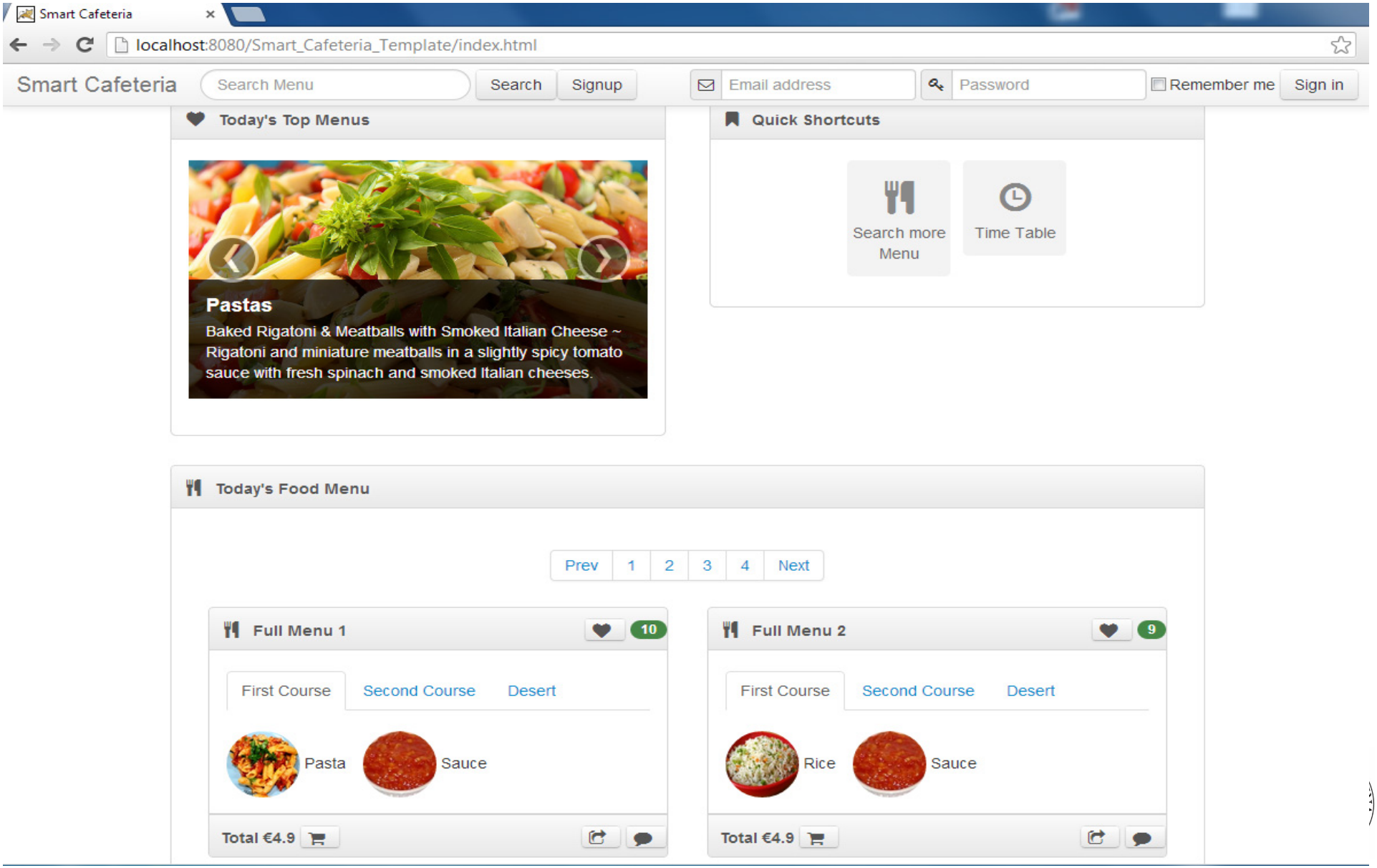
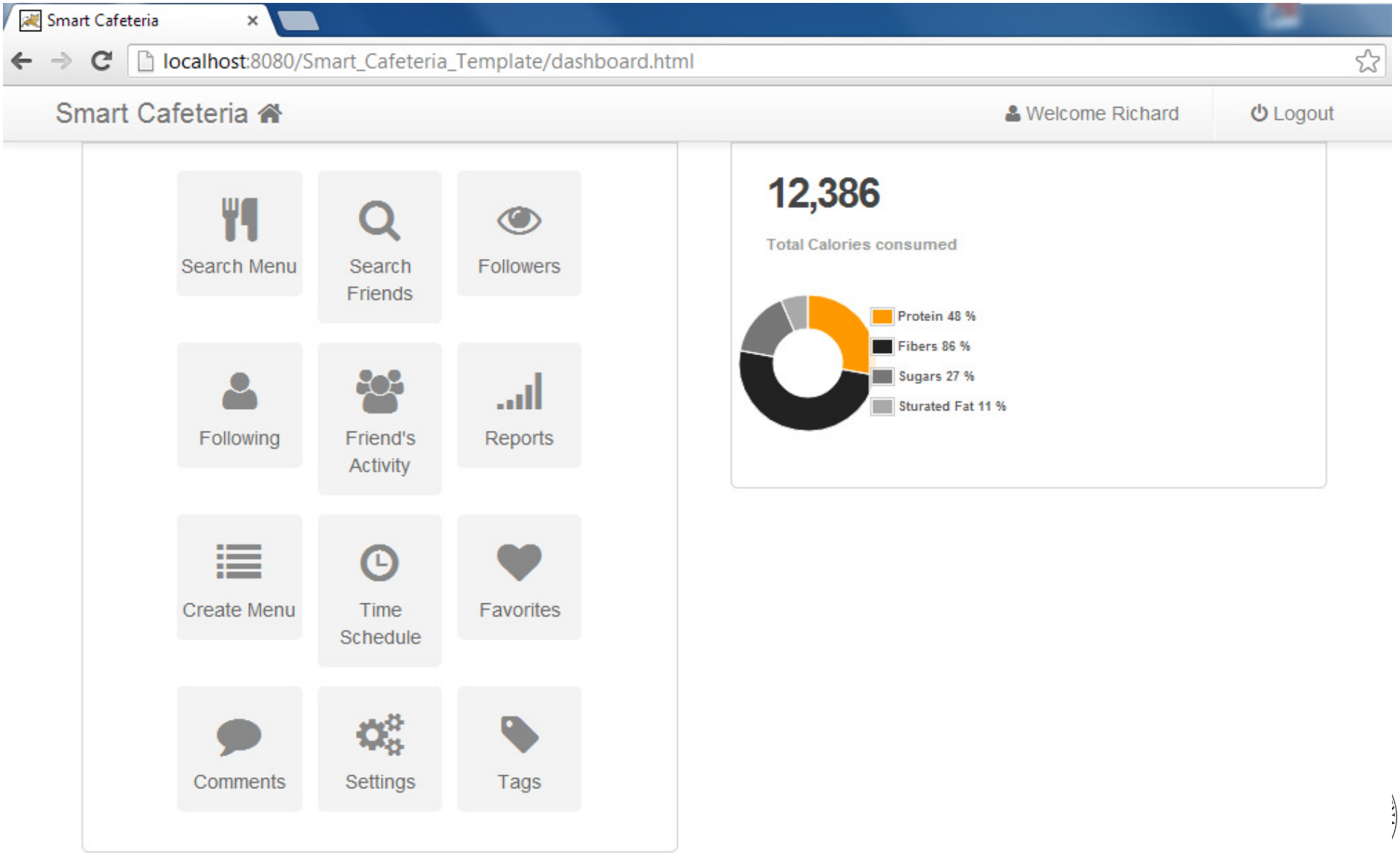
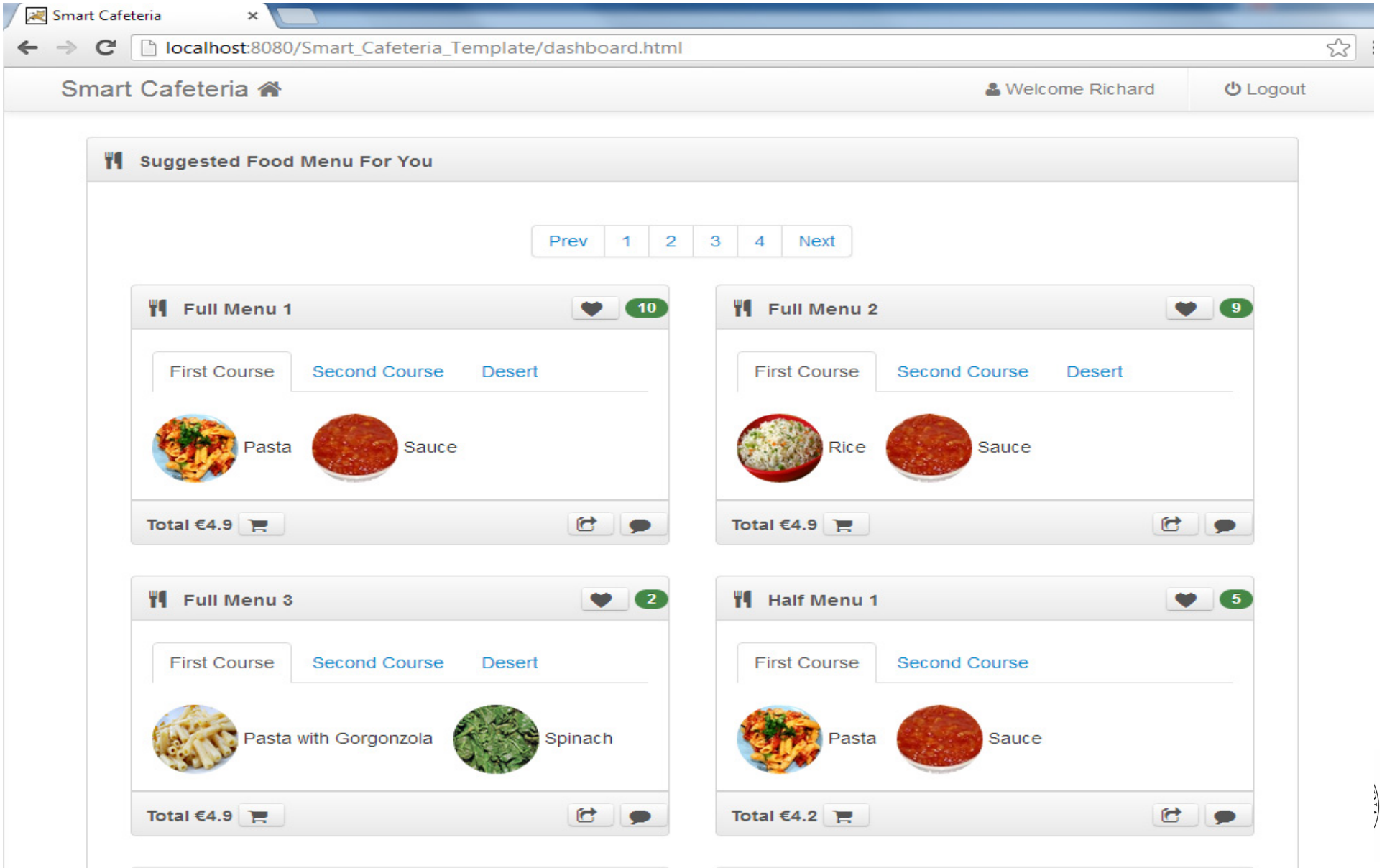
Desktop Prototype[Index Page]



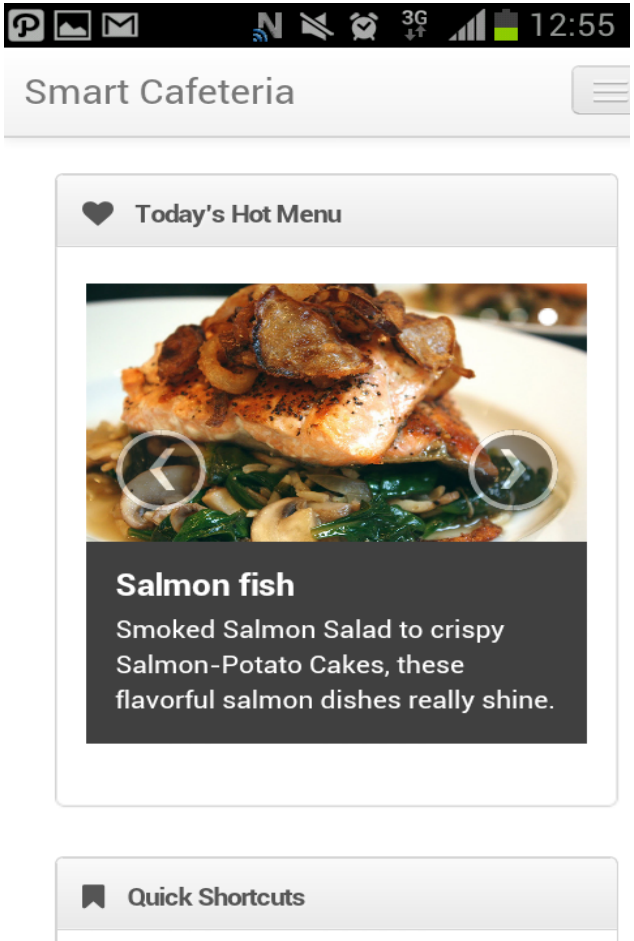
Desktop Prototype[User Dashboard]

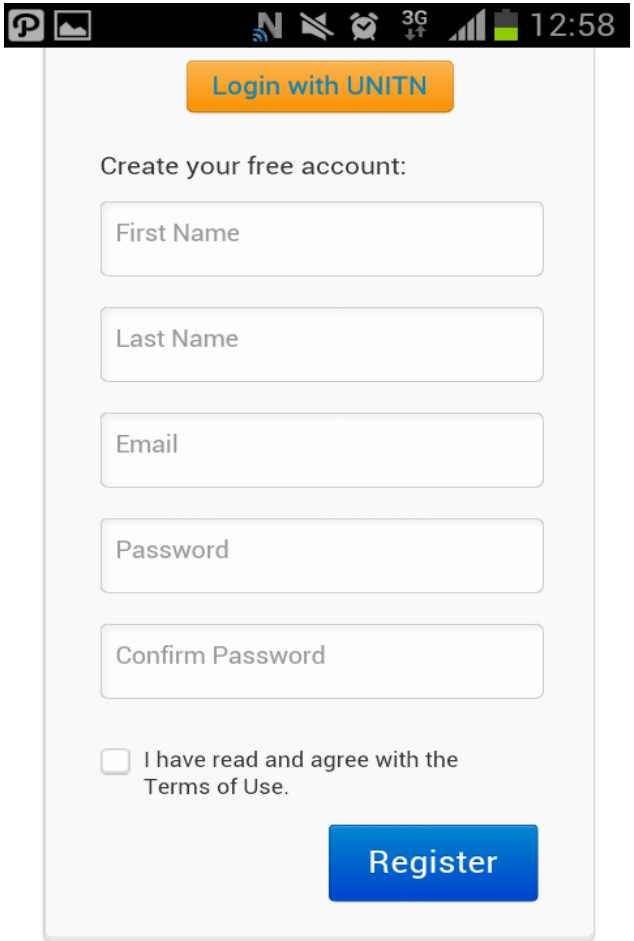


Desktop Prototype[Suggested Food Menu]



Mobile Prototype





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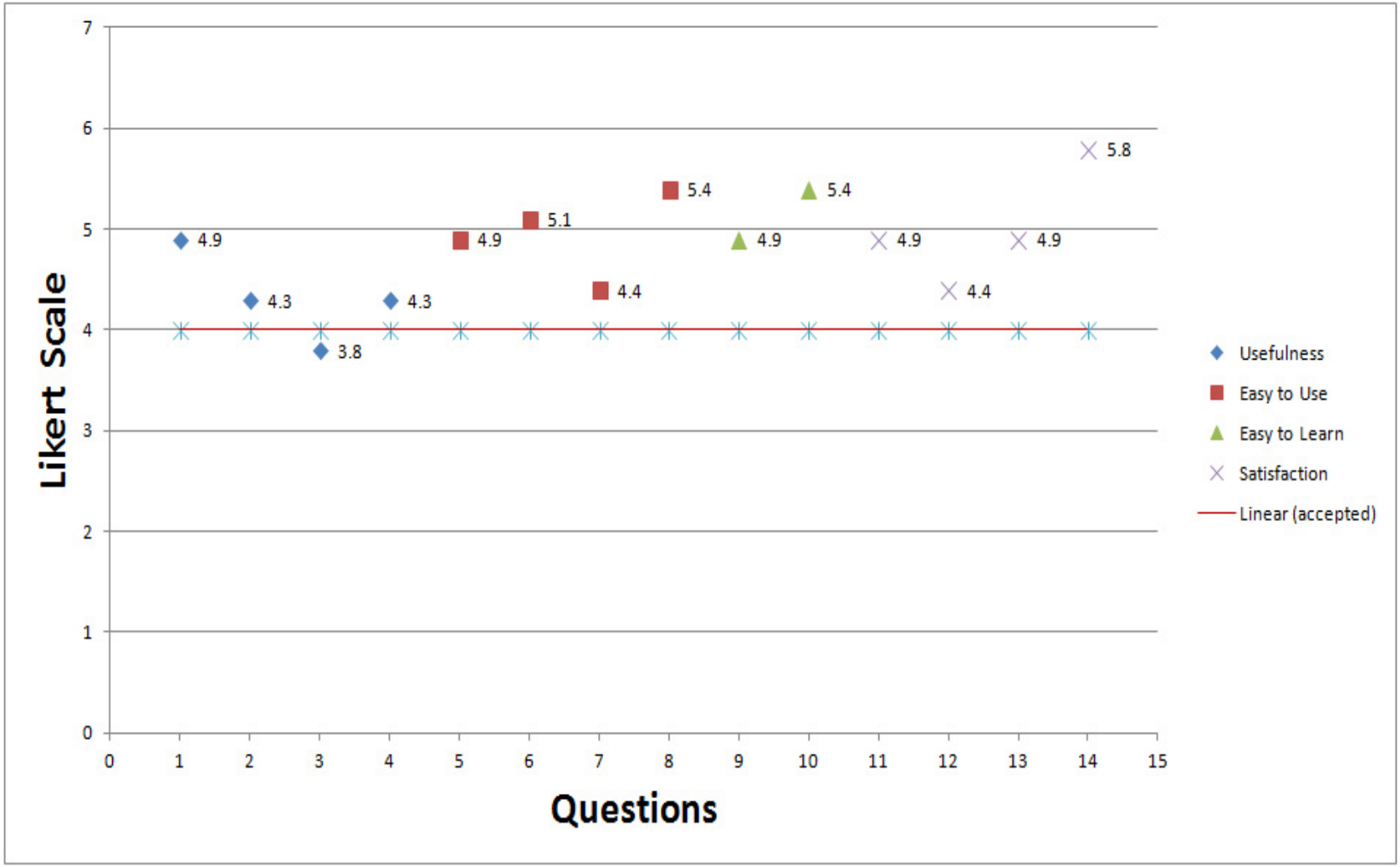
Evaluation Methodology

- Evaluation Methodology: User studies and questionnaire.
- 10 participants.
- Given them 9 tasks to perform.
- Given them 14 usability questions [likert scale: 1-7] to evaluate.
  - usefulness
  - easy to use
  - learnability
  - Satisfaction
- Evaluation for both Desktop and Mobile Prototype.
- Result calculate using Mean(μ) and Standard deviation(σ)

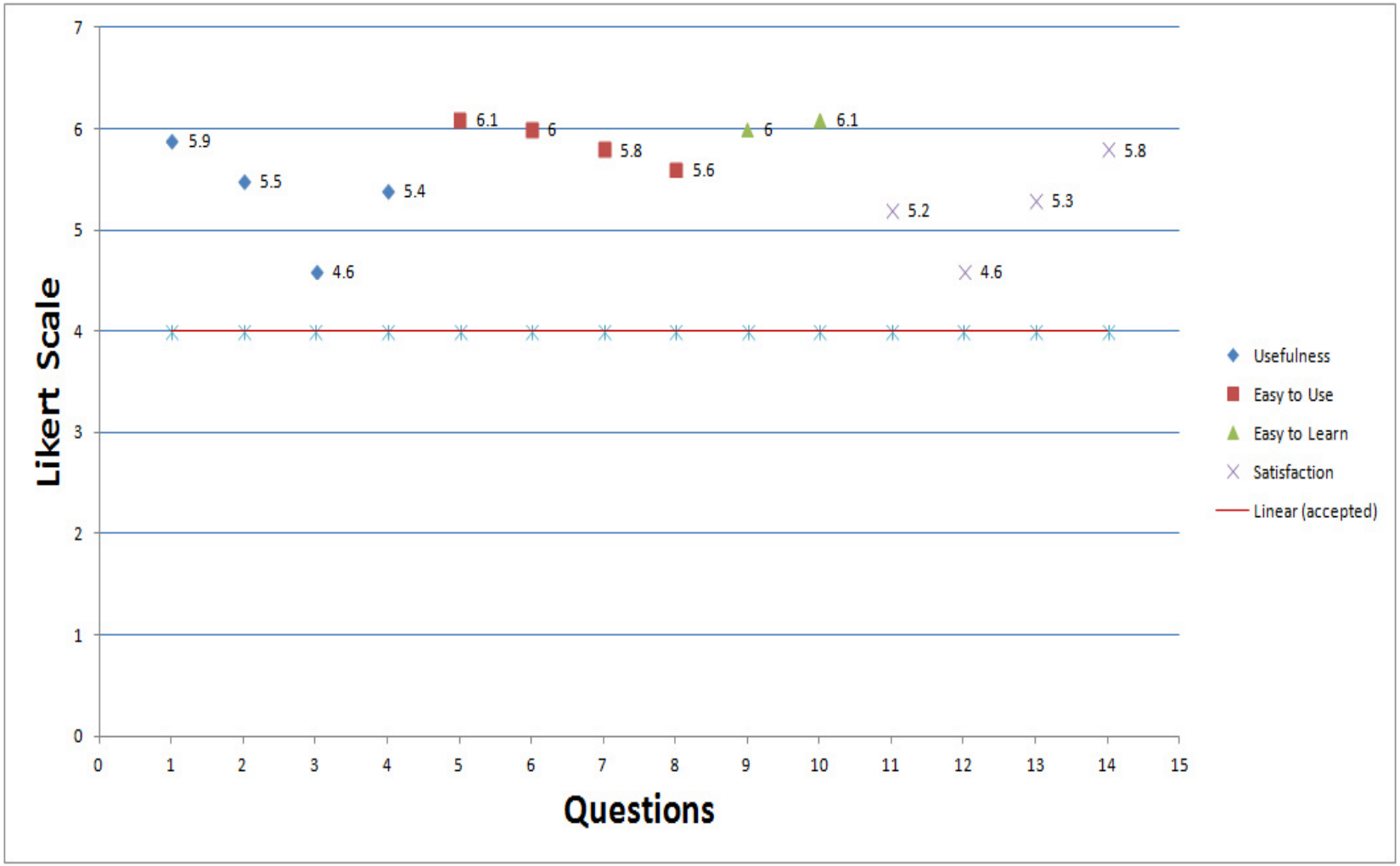
$$\sigma = \sqrt{\frac{1}{N}\sum_i^N (x_i - \mu^2)}$$

$$\mu = \frac{1}{N}\sum_i^N x_i.$$

Evaluation Result for Desktop Prototye



Evaluation Result for Mobile Prototye



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Conclusion and Future Work

"Smart Cafeteria"

- could solve the problems mostly [reduce queue time through notification].
- is adaptive [its functionalities].
- is interactive [Usability Evaluation].

Future Work

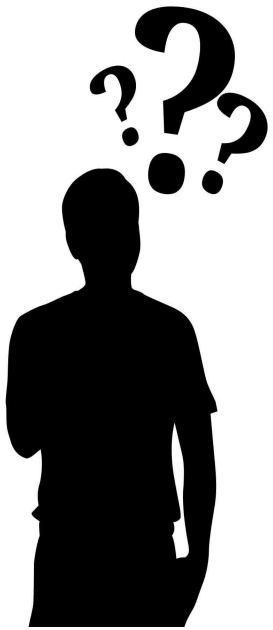
- Build high fidelity prototype [full functional].
- Find out best machine learning approach for adaptability.
- More User Study for better usability.

Resources

- Github Repository
  https://github.com/suptaphilip/Master-Thesis

Questions

Any Questions



Thanks