Modeling Information from Wearable Sensors

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Outline

• The *Mobile Applications (Mobia)* Modeling Framework
• Application Scenario
• Modeling Medgets and User Interactions
• Evaluation: Collecting User Preference
• Summary and Conclusion
Mobia Modeling Framework

- **Mobia Modeling Tool**
  - Allow non-expert users to easily create mobile applications by modeling the mobile application and having a tool automatically transform the model to code
    - Easy to learn
    - Feature modeling constructs that are intuitive
  - Extend to different application domains
    - Current focus: Mobile Health Monitoring
Mobia Modeling Framework
Mobile Health Monitoring

Application Scenario
Modeling the Sensor and Data

- Mobile Screen
- Screen Components

**Medget**
- Name: String
- MedgetType: String
- Symbol: Image

**MedgetData**
- Name: String
- DataType: String
- Symbol: Image

**Thermometer:Medget**
- Name = "ThermoMedget"
- MedgetType = "Thermometer"
- Symbol = 🔄

**Celcius:MedgetData**
- Name = "Celcius"
- DataType = "Float"
- Symbol = °C

**Fahrenheit:MedgetData**
- Name = "Fahrenheit"
- DataType = "Float"
- Symbol = °F

**AveTemp:MedgetData**
- Name = "Ave. Temp."
- DataType = "Graph"
- Symbol = 📈
Modeling the Sensor and Data
Modeling the Sensor and Data

- Dealing with complex scenarios wherein input from one sensor is a prerequisite for another sensor
Modeling User Interaction

• Given
  – Medget Instances: A, B, C
  – Medget Data: x, y, z, a, b
  – Actions: Choose, Drag, Drop, Click, Connect

• User’s Goal
  – Select the Medget A and the Medget Data x
Choose, Drag and Drop
Drag, Connect and Click
Drag, Drop and Click

1. Drag
2. Drop
3. Click

Changes to possible visualizations for every Click action
Modeling User Interaction

• Open Questions
  – Evaluating the interactions
    • Efficient?
    • Intuitive?
    • Easily Learnable?
Evaluation

- Preferred
  - Presentation of a Medget and Related data
  - Presentation of all Available Medgets
  - Preferred Interaction Technique

14 Participants
Presentation of a Medget & Related data
Presentation of all Available Medgets

- **46%** Grouped Display
- **31%** Minimalist Display
- **23%** Individual Display
Preferred Interaction Technique

46%
Choose, Drag and Drop Approach

38%
Drag, Drop and Click Approach

16%
Drag, Connect and Click Approach
Summary and Conclusion

- Overview of the Mobia Framework
- Medget Model Construct to represent information from wearable sensors used for mobile health monitoring
- Model User Interaction
- Evaluation results based on user preference
Thank you for your attention.

Questions?