

Advanced SALT Interactors

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Advanced SALT Interactors

Presentation

- Introduction
- Speech Application Language Tags
- Advanced SALT Interactors - design and characteristics
- Interactors
- Demonstration
- Usability test design
- Test Results
- Lessons learned
- Summary

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Introduction

- Promote usable speech interfaces
 - Provide high level speech tools
 - Perform usability studies providing evidence of usability

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Speech Application Language Tags

- Extends HTML and other markup languages.
- Adds a speech interface to web pages.
- Inputs data using speech and outputs data using speech.
- Multimodal mode can be used with other input devices such as the keyboard, keypad, mouse.

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Speech Application Language Tags Continued

- SALT building blocks
 - prompt tags
 - listen tags
 - dtmf tags
 - smex tags

```
<salt:prompt id="hearMore">
  Would you like to hear more?
</salt:prompt>
```

```
<salt:listen id="yesListen" onreco="handleMore()">
  <salt:grammar>
    <grammar root="toplevel" xml:lang="en-US" version="1.0"
      xmlns="http://www.w3.org/2001/06/grammar"
      tag-format="semantics-ms/1.0">
      <rule id="toplevel" scope="public">
        <ruleref uri="#Yes"/>
        <tag> $.City = $$ </tag>
      </rule>
      <rule id="Yes" scope="public">
        <one-of>
          <item> Yes <tag> $_.value = "Yes" </tag> </item>
          <item> That One <tag> $_.value = "Yes" </tag> </item>
          <item> Okay <tag> $_.value = "Yes" </tag> </item>
          <item> No </item>
        </one-of>
      </rule>
    </grammar>
  </salt:grammar>
</salt:listen>
```

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Design and characteristics

- XHTML document contains SALT objects.
- SALT objects provide speech and speech recognition.
- JavaScript provides programmatic functionality.
- Programmer provides:
 - Prompt content as string(s)
 - Expected user responses as Speech Recognition Grammar Specification
- Advanced Interactor returns users' input as text/XML, specified action, or null.

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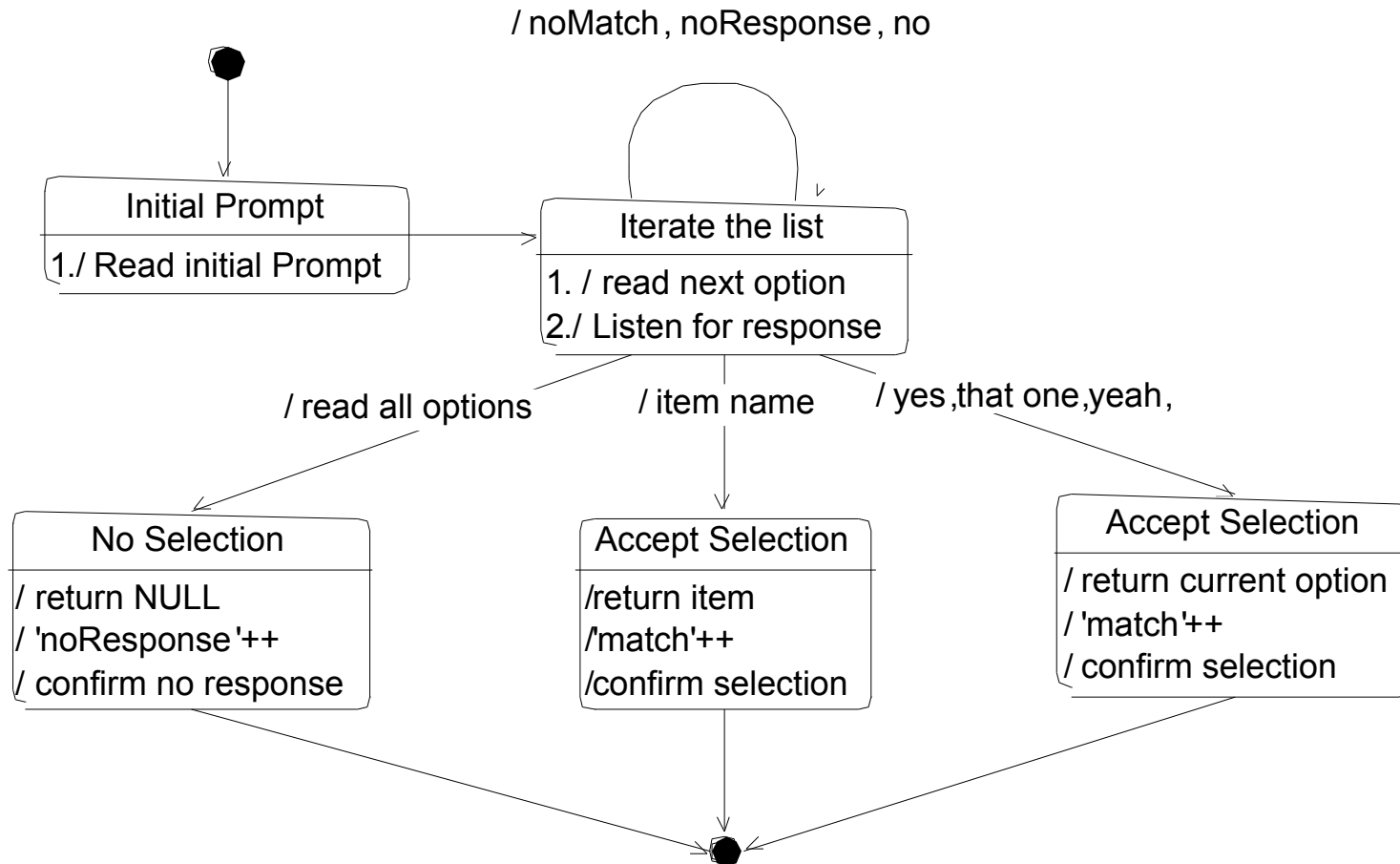
Interactors

1. Single List Selection
2. Multiple List Selection (using speech)
3. Multiple List Selection (using speech) With Deselecting
4. Double Yes/No (using speech)
5. Double Yes/No (using DTMF)
6. Select From N-Best List
7. Different Prompts for Different Responses

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Interactors Continued

8. Context-sensitive Help Prompt
9. Whisper Prompt
10. Confirmation and Correction Dialog
11. Time Out Adjuster
12. Multiple Related Field Selection



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Demonstration Time

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Usability Test Design

- Test 20 or more volunteers.
- Use centrally located, quiet, room on and off campus.
- Use web interface for:
 - Starting Advanced Interactors
 - Instructing Volunteers
 - Capturing Volunteer preferences

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Usability Test Design Continued

- Test cases:
 - Delivered in random order
 - One test case per Interactor
 - Two scenarios per test case
 - Provides instructions to volunteers
 - Returns performance metrics
- Performance and Preference metrics stored in MySQL database.

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Performance Metrics

- Time per iteration
- Error Rate
- Bad Match Rate
- No Response Rate

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Preference Metrics

- Clarity
- Effectiveness
- Ease of use
- Ease of multiple Selection
- Confirmation
- Prompt Speed
- Comments

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Test Results

- Seven Interactors proven useable
- Four Interactors scored well on Preference but not performance metrics
- One Interactor did not perform well regarding Preference and Performance Metrics

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Lessons learned

- Interactors
 - Grammars
 - Volunteer likes and dislikes
 - SDK Limitations
- Usability tests
 - Human Subjects Review
 - Getting volunteers

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Summary

- <http://salt-usability.sourceforge.net/>
- Home page - background information
- Source code
- Metrics
- Testing
- Final report
- Links
- About this site
- Design

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Summary

- Jim Larson
- Cindy Brown
- DLC team
- Gery Gross