Using Statistical Language Model Speech Recognition to improve Call Automation

Peter Voss
Founder, CEO
Smart Action Company, LLC
www.SmartAction.com
SLM – Statistical Language Model

- Smart Phone Apps versus IVR
- Dictation versus Phone Systems
IVR versus Smart Phone Apps

- PSTN
  - Generic IVR Speech Recognition

- Digital
  - Noise Cancellation
  - Digitized Hi-Fi
  - Custom SLM Speech Recognition

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**SmartAction**

Automating Calls. Intelligently.

**Mobile Voice 2012 – Peter Voss**
Dictation versus Phone SR

- High Fidelity
- Noise Cancellation
- Digital Transmission
- Trainable
- SLM
Levels of Speech Recognition

- Tier 2 – **Keyword** Recognition Only
- Tier 3 – **Key Phrase** Recognition Only
- Tier 4 – SLM
  - Natural Language
  - Open Grammar
  - Dictionary
There’s a Problem with SLMs

Understanding!

- Word/Phrase Spotting
- Categorizers
- Natural Language Processing
- Brain (A.I.)
When Do We Need SLM?

- “Personal Assistant”
- How can I help you?
- Complex Responses
- Re-direction
- Open Conversation
Cost - Benefit
# Completion Rate/ ROI

<table>
<thead>
<tr>
<th></th>
<th>Touch-Tone</th>
<th>Tier 3</th>
<th>SLM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-Service Rate</td>
<td>15%</td>
<td>30%</td>
<td>45%</td>
</tr>
<tr>
<td>Cost per Minute</td>
<td>7 cents</td>
<td>12 cents</td>
<td>17 cents</td>
</tr>
<tr>
<td>Monthly IVR cost</td>
<td>$1,575</td>
<td>$5,400</td>
<td>$11,475</td>
</tr>
<tr>
<td>Month Savings</td>
<td>$18,000</td>
<td>$36,000</td>
<td>$54,000</td>
</tr>
<tr>
<td>Net Annual Savings</td>
<td>$197,100</td>
<td>$367,200</td>
<td>$510,300</td>
</tr>
</tbody>
</table>

Assumptions: 50,000 calls per month. Average call length is 3 minutes. Fully loaded operator cost is $0.80 per active phone minute (from research showing an average per call cost in the United States of $4.80 for a 6 minute call).

<table>
<thead>
<tr>
<th>Application</th>
<th>Touch-Tone</th>
<th>SLM</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scheduling</td>
<td>&lt; 4 %</td>
<td>&gt; 40 %</td>
<td>Older demographic happy to use system</td>
</tr>
<tr>
<td>Returns</td>
<td>~ 5 %</td>
<td>~ 34 %</td>
<td>3 minutes versus 6 for operators Ratings above live operators</td>
</tr>
<tr>
<td>Order Changes</td>
<td>N/A</td>
<td>38 %</td>
<td>Save-the-sale &amp; Up-sell pay for system</td>
</tr>
</tbody>
</table>
Benefits of SLMs

- Better recognition
- More complex transactions
- More conversational/natural
- Higher Completion Rate
- Superior Customer Experience
- Improved ROI
Thank You

Peter Voss

peter@SmartAction.com

www.SmartAction.com/demo