The Importance of UI Design when implementing Voice Biometrics in Mobile Apps

Presented by:

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Mobile Voice - April 16, 2013
Meet VoiceVault

- Privately held company 100% focused on voice biometrics
- VoiceVault sets the standard for voice biometric identity verification in Financial Services:
  - Best for production accuracy (0.1% EER)
  - Best for short, engaging user experience
  - Millions of voices enrolled and actively verifying
  - Over a billion dollars in mobile app money transfers secured with VoiceVault
  - Used in many countries and many languages

HQ’s in El Segundo, California and a Development office in Reading, UK.
Considerations for Mobile VB UI

• Say something / what to say
• When to start / when to stop / where to speak
• Good environment (noise, bandwidth)?
• Speaking loudly enough?
• Did they say the right thing?
• Is something happening?
• It didn’t work... now what?
<table>
<thead>
<tr>
<th>Number Generator</th>
<th>Background Levels</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>three</strong></td>
<td>![Network Quality](Network Quality)</td>
</tr>
<tr>
<td><strong>one</strong></td>
<td></td>
</tr>
<tr>
<td><strong>nine</strong></td>
<td></td>
</tr>
<tr>
<td><strong>six</strong></td>
<td></td>
</tr>
</tbody>
</table>
Record

1. Press the record button below
2. Say the numbers on the right

Number Generator

one

Background Levels

MAX

Network Quality
Are you happy with your enrollment?
You can try again if you like.

Retry  Proceed
### Select Account

<table>
<thead>
<tr>
<th>Account Type</th>
<th>Account Number</th>
<th>Balance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Checking Account</td>
<td>12**567890</td>
<td>$4383.59</td>
</tr>
<tr>
<td>Savings Account</td>
<td>09**654321</td>
<td>$4154.59</td>
</tr>
<tr>
<td>Credit Card</td>
<td>01**856244</td>
<td>-$2901.47</td>
</tr>
</tbody>
</table>

### Statement

<table>
<thead>
<tr>
<th>Date</th>
<th>Description</th>
<th>Paid In</th>
<th>Paid Out</th>
</tr>
</thead>
<tbody>
<tr>
<td>5th Feb</td>
<td>Cable Subscription - Transfer...</td>
<td>-$45.00</td>
<td></td>
</tr>
<tr>
<td>23rd Jan</td>
<td>Cable Subscription - Transfer...</td>
<td>-$258.00</td>
<td></td>
</tr>
<tr>
<td>23rd Jan</td>
<td>Credit Card - Transfer...</td>
<td>-$456.00</td>
<td></td>
</tr>
<tr>
<td>10th Sep</td>
<td>Loan Payment - Standing Order</td>
<td></td>
<td>$3000.00</td>
</tr>
<tr>
<td>17th Aug</td>
<td>Rent - Direct Debit 7238-5757</td>
<td>-$1200.00</td>
<td></td>
</tr>
<tr>
<td>17th Aug</td>
<td>Salary - BACS Transfer</td>
<td>$3000.00</td>
<td></td>
</tr>
<tr>
<td>16th Aug</td>
<td>Gas Bill - Direct Debit 4757-3356</td>
<td>-$193.40</td>
<td></td>
</tr>
<tr>
<td>15th Aug</td>
<td>Loan Payment - Standing Order</td>
<td>-$250.00</td>
<td></td>
</tr>
</tbody>
</table>

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**Your Payment Was Unsuccessful**

The system was unable to process your speech. This might be because you are in a noisy environment or you may not have correctly spoken the requested digits.

**OK**
The evolution of the UI...
Example Initial Concept

2.3 Verify Voice Print

2.4 Speaking

2.5 Voice Verified

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Refined UI after Usability Review

![Before Usability Review](image1.png)

![After Usability Review](image2.png)
Audio factors to consider...

• Audio data format
  • U-law and A-law are 50% smaller than PCM
  • Storage and throughput considerations

• If at all possible...
  • Disable noise cancellation
  • Disable auto gain control (AGC)

• Full frequency range is sent to the engine
  • Unlike with traditional telephony

• Where is the microphone?
Dealing with device specifics

- Consider using device / platform-specific voice biometric configurations
  - Can share common settings (or not)
  - Knowledge of the device can aid troubleshooting
  - Can also enable device / platform specific tuning
    - Mic characteristics
    - SNR thresholds etc
Thank you

Please feel free to contact me at:

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