Blind and Human: Exploring More Usable Audio CAPTCHA Designs

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Challenges with Audio CAPTCHAs

- High attention levels
- Emphasis on working memory
- Audio interference with Assistive Technology
- Longer time to solve
  - Audio = 51 sec.
  - Visual = 9.8 sec.
- Lower success rates
  - Audio = 50%
  - Visual = 93%
Our Prototypes

**Control**
Write down what you hear

A 3 C
Answer: A3C

**Our designs**

**Math**
Calculate the total

1 + 1 = 4
Answer: 5

**Pauses**
Write down what you hear

A 3 C
Answer: A3C

**Character**
Count the number of A's

A A = 8
Answer: 2

**Categories**
Count the number of bird sounds

Answer: 2
Implementazione:

1. Collect open source audio samples
2. Develop the CAPTCHA prototypes
3. Create online experimental test-bed
4. Data processing, analysis and trend projection
5. Collect the qualitative and quantitative metrics
6. Schedule and conduct interviews
## Summary of Key Results

<table>
<thead>
<tr>
<th></th>
<th>Avg Accuracy</th>
<th>Avg Speed</th>
<th>Pref. to control</th>
<th>Security Random</th>
<th>Security NLP</th>
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</thead>
<tbody>
<tr>
<td>Control</td>
<td>43%</td>
<td>53.6s</td>
<td>2.7%</td>
<td>++</td>
<td>-</td>
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<tr>
<td>Math</td>
<td>89%</td>
<td>31.7s</td>
<td>52%</td>
<td>+</td>
<td>+</td>
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<tr>
<td>Character</td>
<td>87%</td>
<td>32.7s</td>
<td>67%</td>
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<tr>
<td>Pauses</td>
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<td>35.4s</td>
<td>73%</td>
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<tr>
<td>Categories</td>
<td>70%</td>
<td>31.1s</td>
<td>61%</td>
<td>-</td>
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</tbody>
</table>
THANK YOU!

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