# Toward Accessible Search

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# Overview

Search
Accessibility
Google
Mobile
HCI
Conclusion

- The Core Value Of Search.
- Accessibility And Search.
- Experiment: Google Accessible Search.
- Search And Ubiquitous Access.
- Role Of Search In HCI.
- Redefining accessible search.

Search
Core Value Of Search
Effective Information Access
Timely Information Access
Relevant Information Access
Accessibility
Google
Mobile
HCI
Conclusion

# The Core Value Of Search

# Core Value Of Search


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Google

Mobile

HCI

Conclusion


**Effective, timely access to relevant information!**

**Effective** Ensure rapid task completion.
**Timely** Deliver results as quickly as possible.
**Relevant** Interpret query, and rank results.

# Effective Information Access

Search
Core Value Of Search
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Accessibility
Google
Mobile
HCI
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## Metric: Task Completion

- Interpret user intent,
- Retrieve relevant information,
- Present it effectively to enable task completion.

# Timely Information Access


Search
Core Value Of Search
Effective Information Access
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Accessibility
Google
Mobile
HCI
Conclusion


**Metric: Time to completion.**

- Return results as quickly as possible.
- Return fresh information.
- Present information to be immediately accessible.

# Relevant Information Access

Search
Core Value Of Search
Effective Information Access
Timely Information Access
Relevant Information Access
Accessibility
Google
Mobile
HCI
Conclusion

**Metric: Successful task completion.**

- Holy grail: perfect recall.
- Effective search is an accessibility win.

Search
Accessibility
Accessibility
Accessibility Challenges
Serving User Needs
Google
Mobile
HCI
Conclusion

# Accessibility And Search

# Accessibility

Search
Accessibility
Accessibility
Accessibility Challenges
Serving User Needs
Google
Mobile
HCI
Conclusion

**Serve users in the long tail!**

**Information Retrieval** Serve content in the long tail.
**Accessibility** Serve users in the long tail.

**Goal: Rapid task completion.**

# Accessibility Challenges

Search
Accessibility
Accessibility
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Google
Mobile
HCI
Conclusion

- User interfaces for rapid task completion.
- Adapt to user's needs and abilities.

# Serving User Needs

Search
Accessibility
Accessibility
Accessibility Challenges
Serving User Needs
Google
Mobile
HCI
Conclusion

**Serving users in the long tail:**

- Serve results so they are immediately usable.
- Identify content that matches user's needs.
  - Task at hand.
  - User interaction modality in use.

**Retrieve, format and serve result appropriately.**

Search
Accessibility
Google
Google Accessible Search
What We Built
Delivering Accessible Search
Lessons Learnt
Accessible View
Mobile
HCI
Conclusion

# Experiment: Google Accessible Search

# Google Accessible Search


Search

Accessibility

Google

Google Accessible Search

What We Built

Delivering Accessible Search

Lessons Learnt

Accessible View

Mobile

HCI

Conclusion


**Observations that led to Accessible Search:**

- Common queries, *e.g.*, *weather* answered equally well by many Web documents.
- Pick most appropriate result based on user's access needs.
- Success metric: Rapid task completion.

**Experiment: Use *accessibility* as a secondary metric.**

# What We Built

Search
Accessibility
Google
Google Accessible Search
What We Built
Delivering Accessible Search
Lessons Learnt
Accessible View
Mobile
HCI
Conclusion

- Identified a set of key HTML features to measure accessibility.
- Built a linear classifier using these features.
- Used standard machine learning techniques to tune the weights in the classifier.

Classifier computed an *accessibility* score in the range $[-1, 1]$

# Delivering Accessible Search

Search
Accessibility
Google
Google Accessible Search
What We Built
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Lessons Learnt
Accessible View
Mobile
HCI
Conclusion

- Used *accessibility* metric as a secondary signal.
- Launched *Accessible Search* as a CSE — Custom Search Engine.
- Classifier continuously tuned based on user feedback and performance.

**Success Metric: Timely task completion.**

# Lessons Learnt

Search
Accessibility
Google
Google Accessible Search
What We Built
Delivering Accessible Search
Lessons Learnt
Accessible View
Mobile
HCI
Conclusion

**Why Accessible Search remains a Labs experiment:**

- Met original goal of matching results to user's needs.
- Concept difficult to communicate to end-users.
  - Google search has always worked well for blind users.
  - Users reluctant to switch to a specialized result set.

**Consequence: Accessible Search is not used heavily.**

# Accessible View


Search

Accessibility

Google

Google Accessible Search

What We Built

Delivering Accessible Search

Lessons Learnt

Accessible View

Mobile

HCI

Conclusion


**Efficient UI for rapid task completion.**

- Enables users to move through results with the keyboard.
- Traverse result set as a continuous scroll.
- Navigating results automatically speaks the snippet.
- Pressing enter opens current result.
- Keyboard access to advanced search tools including filters.

**Accessible Views is an opt-in UI experiment.**

Search
Accessibility
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Eyes-Free Android And Search
HCI
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# Search And Ubiquitous Access

# Mobile Access

Search
Accessibility
Google
Mobile
Mobile Access
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HCI
Conclusion

**Challenge: Rapid task completion on mobile devices.**

- Format results to suit mobile displays.
- Serve results that are optimized for small devices.
- Augment with voice interaction.

**Mobile: Just a different access challenge!**

# Eyes-Free Android And Search

Search
Accessibility
Google
Mobile
Mobile Access
Eyes-Free Android And Search
HCI
Conclusion

**1Vox —Your voice is my command!**

- Use voice search to input query.
- Speak relevant information.
- No context-switch.

Search
Accessibility
Google
Mobile
HCI
Search And HCI
Search And Eyes-Free Interaction
What Is UI?
Search In User Interfaces
Conclusion

# Role Of Search In HCI

# Search And HCI

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Google
Mobile
HCI
Search And HCI
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**Accessibility: A band-width problem!**

- User's attention span goes down.
- User's display size goes down.
- User's network band-width goes down.

**Search is crucial to effective human-computer interaction!**

# Search And Eyes-Free Interaction


Search
Accessibility
Google
Mobile
HCI
Search And HCI
Search And Eyes-Free Interaction
What Is UI? Search In User Interfaces
Conclusion


- Visual displays optimized for rapid scanning.
- Search essential for compensating in eyes-free interaction.
- Every aspect of the user interface needs to be searchable!

**Search enables immediate random access!**

# What Is UI?


Search
Accessibility
Google
Mobile
HCI
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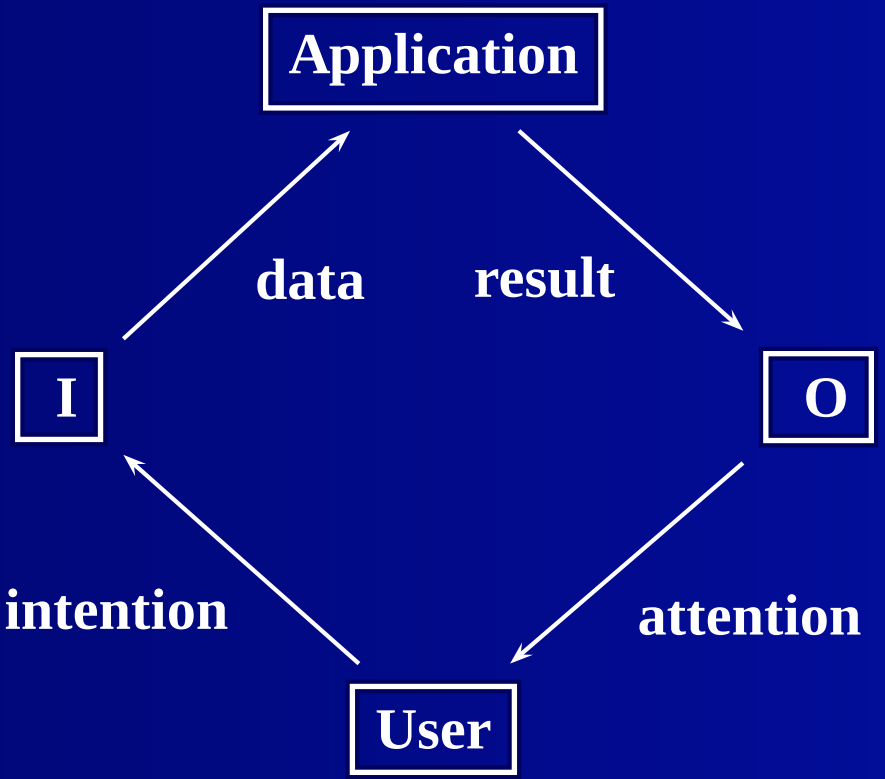
Conclusion


# Search In User Interfaces


Search
Accessibility
Google
Mobile
HCI
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**What is a user interface anyway?**

- Collect user input to interpret user intent.
- Format response to capture user attention.

**Good Search = Light-weight User Interface**

# Redefining Accessible Search

Search
Accessibility
Google
Mobile
HCI
Conclusion
Redefining Accessible Search
Watch Access Take Off!

- Task completion remains the metric to optimize.
- Accessibility is about tailoring the interface to match user needs.
- Effective search is a means toward minimizing user interaction.

# Watch Access Take Off!


Search

Accessibility

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HCI

Conclusion

Redefining Accessible Search

Watch Access Take Off!