Accessiblü

Managed Digital Accessibility Ops

Accessibility Evaluation Report:

Semantic Scholar

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Conducted by: Accessiblü, LLC

For: Library Accessibility Network (LAA)

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Summary of Accessibility Findings

Accessiblü conducted a **high-level accessibility evaluation** of the Semantic Scholar AI-powered research platform to assess its usability for individuals with disabilities. The review was conducted using the JAWS screen reader, keyboard-only navigation, and manual inspection for conformance to select WCAG 2.2 AA success criteria.

Key Findings

The Semantic Scholar platform presents both notable accessibility features and several accessibility challenges that create barriers for users with disabilities, particularly those who rely on screen readers and keyboard navigation. During our testing, we identified issues with heading structure, focus management, missing ARIA states, and inaccessible dynamic content updates. While the platform shows some positive accessibility features, such as properly labeled form controls and hidden decorative images, significant improvements are needed to ensure full accessibility compliance.

The platform's search functionality is a notable accessible feature, with proper labeling of search fields and filters. However, critical issues exist with focus management when using filters, inconsistent announcement of dynamic content changes, and missing live regions that would inform screen reader users of page updates. Additionally, the PDF documents accessed through the platform lack proper structural markup, making them difficult to navigate for assistive technology users.

Top 3 Issues Identified

1. **Missing H1 Headings and Improper Heading Structure**
    - The platform lacks proper H1 headings on main pages, starting instead with H2 elements, disrupting the logical document outline.
    - **Impact:** Screen reader users cannot effectively navigate page structure using heading navigation commands.
    - **WCAG Success Criteria:** 1.3.1 Info and Relationships (A), 2.4.6 Headings and Labels (AA)
2. **Focus Management and Keyboard Navigation Issues**
    - Filter interactions cause unpredictable focus changes, often returning users to the top of the page unexpectedly.
    - Some interactive elements are only accessible via tab navigation, not through arrow key navigation.
    - **Impact:** Keyboard-only users and screen reader users lose their place in the interface, creating confusion and inefficiency.
    - **WCAG Success Criteria:** 2.4.3 Focus Order (A), 2.1.1 Keyboard (A)

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3. **Missing Live Regions and Dynamic Content Announcements**
    - Search results and filter applications don't announce changes to screen reader users.
    - State changes for expandable elements are not consistently communicated.
    - **Impact:** Users relying on screen readers remain unaware of important content updates and changes.
    - **WCAG Success Criteria:** 4.1.3 Status Messages (AA), 4.1.2 Name, Role, Value (A)

Disabilities Impacted

Blind and Low-Vision Users

- **Issues:** Missing H1 headings, improper heading structure, lack of live region announcements, focus management problems, and inaccessible PDF content structure.
- **Impact:** Screen reader users struggle to navigate the platform effectively, missing important content updates and becoming disoriented when focus changes unexpectedly.

Users with Motor Disabilities

- **Issues:** Inconsistent keyboard navigation patterns, focus management problems, and elements only accessible through specific navigation methods.
- **Impact:** Keyboard-only users face difficulties accessing all functionality and may become trapped in certain interface sections.

Neurodiverse Users

- **Issues:** Unpredictable focus behavior, inconsistent interaction patterns, and lack of clear feedback for actions taken.
- **Impact:** Users with cognitive disabilities experience confusion due to inconsistent interface behavior and missing feedback mechanisms.

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Page-Specific Findings and Impact Analysis

Homepage

Issue	WCAG Success Criteria	Description	Example
Missing H1 Heading	**1.3.1 Info and Relationships (A)**	Page lacks proper H1 heading, starting with H2 elements	Main page content begins with H2 "A free, AI-powered research tool"
Improper Navigation Order	**2.4.3 Focus Order (A)**	Skip links and navigation elements only accessible via tab, not arrow keys	Skip links are announced contiguously but require tabbing to access
Missing Modal Titles	**4.1.2 Name, Role, Value (A)**	Sign-in and account creation modals lack proper titles	Dialog opens without announcing modal title, only content description
Inconsistent Focus Management	**2.4.3 Focus Order (A)**	Focus behavior inconsistent when closing dialogs	Closing modal may not return focus to triggering element

Impact Summary: The homepage provides a functional search interface but lacks proper structural markup that screen reader users rely on for navigation. The missing H1 heading and improper focus management create barriers to efficient use, while modal dialogs that lack proper titles cause confusion about interface state and purpose.

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Homepage Screenshot

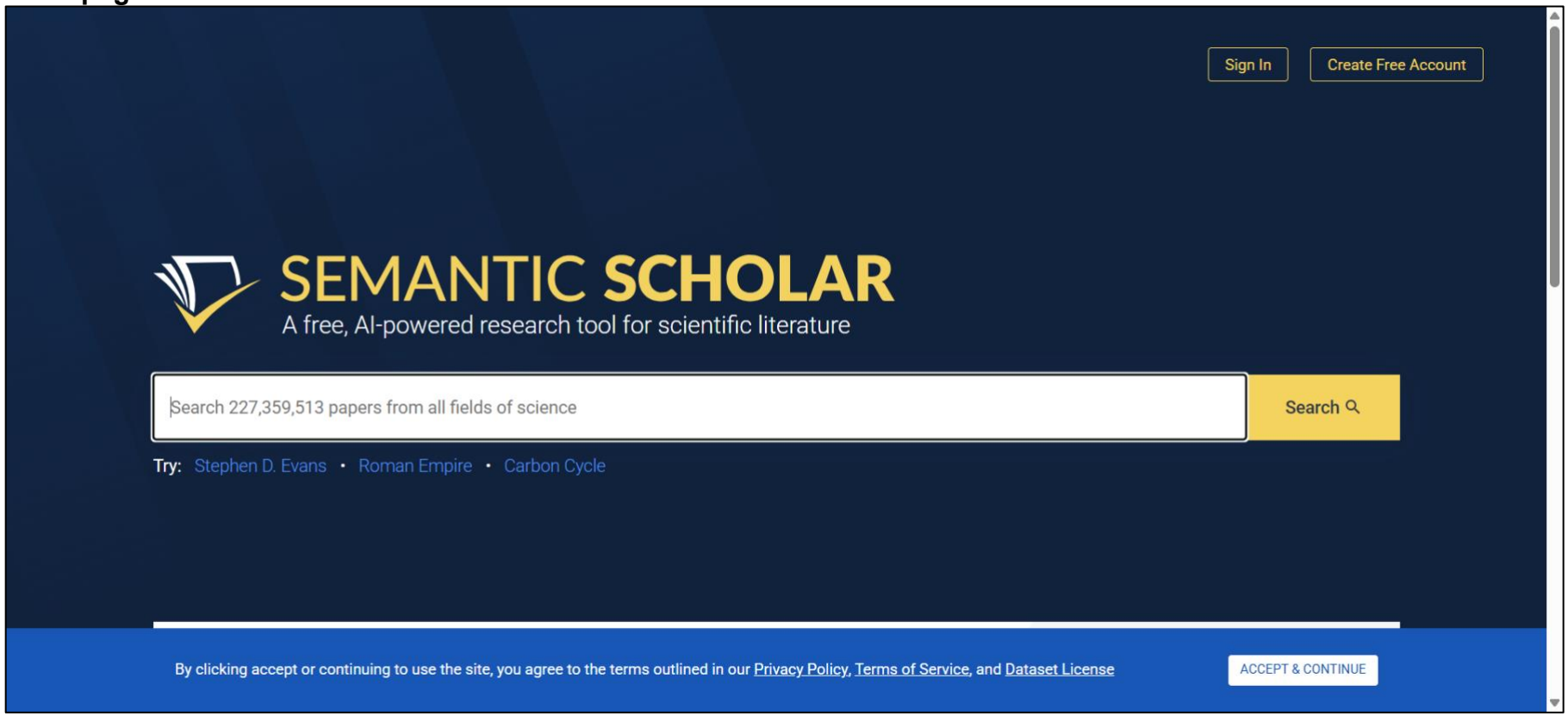

Figure 1. The Semantic Scholar homepage with main search interface and account access options.

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Search Results Page

Issue	WCAG Success Criteria	Description	Example
Missing Live Regions	**4.1.3 Status Messages (AA)**	Search results and filter changes not announced to screen readers	Applying "education" filter doesn't announce result count changes
Improper List Structure	**1.3.1 Info and Relationships (A)**	Search results appear as bulleted items but not coded as lists	Results shown with bullet points but lack proper list markup
Focus Management Issues	**2.4.3 Focus Order (A)**	Filter interactions cause unexpected focus changes to page top	Selecting filter option collapses accordion and moves focus unexpectedly
Missing Combo Box Identification	**4.1.2 Name, Role, Value (A)**	Search suggestions not announced as combo box options	Dropdown suggestions appear but aren't identified as selectable options

Impact Summary: The search results page provides comprehensive filtering options but suffers from significant accessibility barriers. Users cannot effectively understand when search results change, and the lack of proper list structure makes it difficult to comprehend the relationship between search results. Focus management issues create a frustrating experience for keyboard users.

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Search Results Screenshot

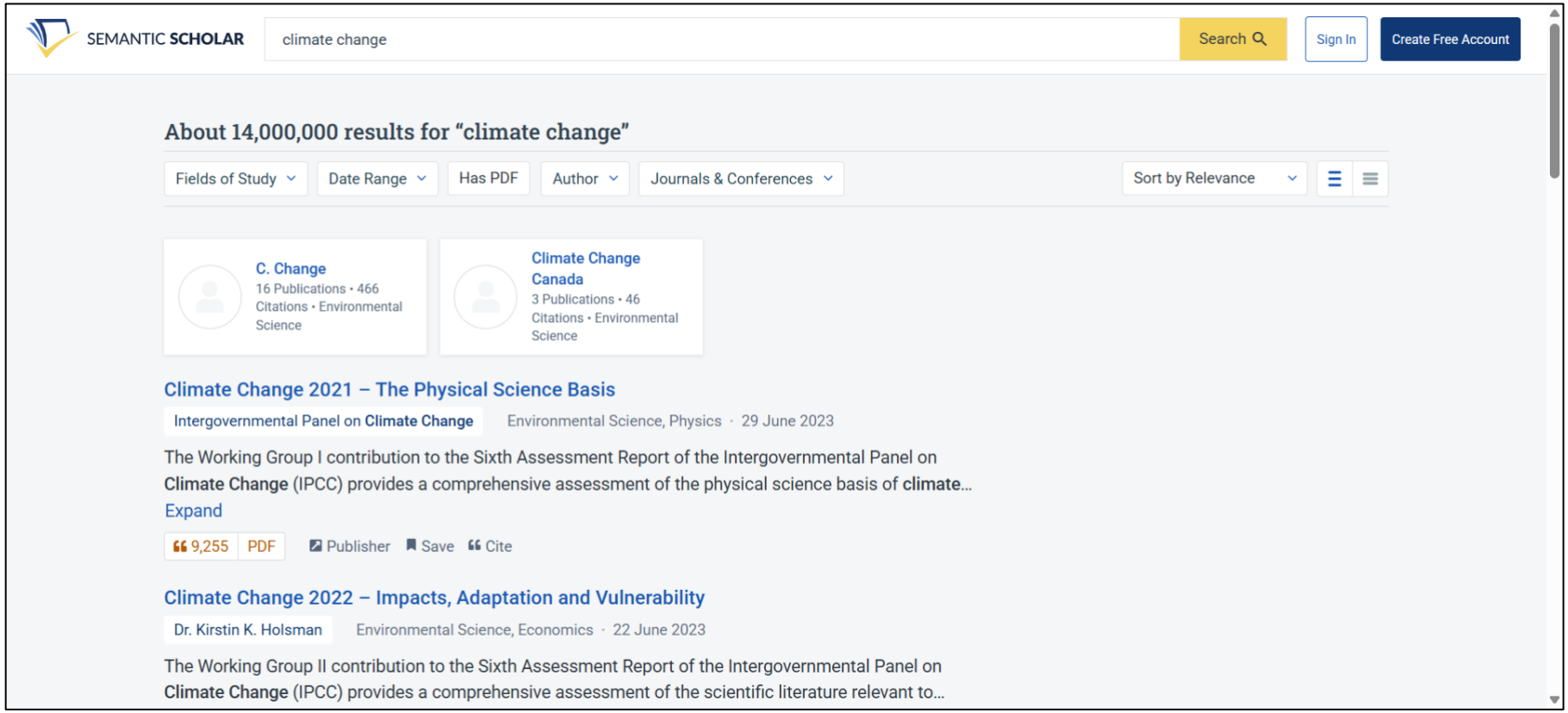

Figure 2. Search results page displaying climate change research with filtering options and result listings.

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Filtered Search Results Page

Issue	WCAG Success Criteria	Description	Example
Missing State Announcements	**4.1.2 Name, Role, Value (A)**	Applied filters not announced to screen readers	"Education" filter selection only indicated by color change
Unpredictable Focus Behavior	**2.4.3 Focus Order (A)**	Filter selection collapses accordions and changes focus	Date range selection closes filter panel and moves focus to page top
Missing Live Region Updates	**4.1.3 Status Messages (AA)**	Result count changes not announced when filters applied	Filtering from 14 million to 48,200 results not announced
Inconsistent Navigation	**2.1.1 Keyboard (A)**	Some elements only accessible via tab, not arrow navigation	Author expansion buttons require tab navigation to access

Impact Summary: The filtered search results demonstrate the platform's powerful filtering capabilities but reveal significant accessibility gaps. Users cannot effectively understand what filters are active or how they affect results, making the advanced search functionality largely inaccessible to screen reader users.

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Filtered Search Results Screenshot

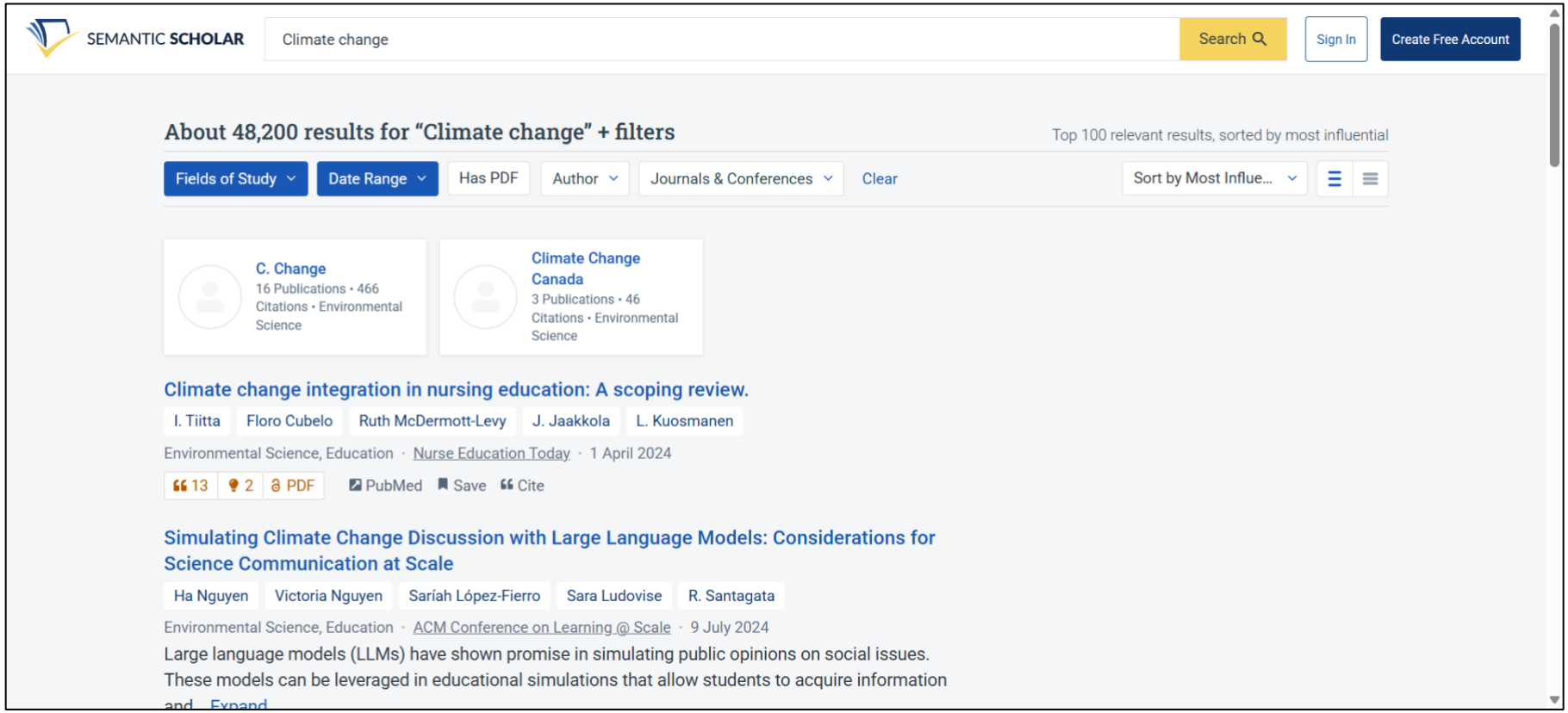

Figure 3. Filtered search results page showing applied filters and refined result set with sorting options.

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PDF Document Viewer

Issue	WCAG Success Criteria	Description	Example
Missing Table Structure	**1.3.1 Info and Relationships (A)**	Tables in PDF documents lack proper markup	JAWS reports "no tables" despite visible tabular data
Improper Heading Structure	**1.3.1 Info and Relationships (A)**	PDF contains only H2 headings, no H1 structure	Document shows "heading level 2" as only heading type
Missing Link Identification	**4.1.2 Name, Role, Value (A)**	Interactive elements in PDF not properly identified	Tab navigation doesn't announce any interactive elements
Keyboard Navigation Issues	**2.1.1 Keyboard (A)**	Limited keyboard navigation within PDF content	Tab key provides no feedback about focusable elements

Impact Summary: The PDF documents accessed through Semantic Scholar lack fundamental accessibility features. Screen reader users cannot effectively navigate document structure, access tabular data, or interact with document content, severely limiting the research capabilities that the platform is designed to provide.

Note: The Adobe document interface was not part of this evaluation. The PDF documents were downloaded and opened with Adobe in order to evaluate the PDF document itself.

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Adobe PDF Viewer Screenshot

Figure 4. The Adobe PDF document viewer showing a research paper with standard Adobe interface controls.

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Code Snippets

Missing H1 Heading Structure (1.3.1)

html

```
<!-- Current problematic implementation -->
<h2>A free, AI-powered research tool for scientific literature</h2>
<h2>What is Semantic Scholar</h2>

<!-- Recommended fix -->
<h1>Semantic Scholar - AI-Powered Research Platform</h1>
<h2>A free, AI-powered research tool for scientific literature</h2>
<h3>What is Semantic Scholar</h3>
```

Missing Live Region Announcements (4.1.3)

html

```
<!-- Current problematic implementation -->
<div id="search-results">
  <!-- Results update here without announcement -->
</div>

<!-- Recommended fix -->
<div id="search-results" aria-live="polite" aria-atomic="false">
  <!-- Results update here with announcement -->
</div>
<div id="status-message" aria-live="polite" aria-atomic="true">
  About 48,200 results for "climate change" + filters
</div>
```

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Improper Filter State Management (4.1.2)

html

```
<!-- Current problematic implementation -->
<button class="filter-button" onclick="toggleFilter('education')">
  Education
</button>

<!-- Recommended fix -->
<button class="filter-button"
        aria-expanded="false"
        aria-pressed="false"
        aria-describedby="filter-help"
        onclick="toggleFilter('education', this)">
  Education
</button>
<div id="filter-help" class="sr-only">
  Press to toggle education filter
</div>
```

Missing Combo Box Identification (4.1.2)

html

```
<!-- Current problematic implementation -->
<input type="text" id="search-field" placeholder="Search papers...">
<div class="suggestions">
  <div>Climate Change 2021</div>
  <div>Climate Change 2007</div>
</div>
```

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```
<!-- Recommended fix -->
<input type="text"
       id="search-field"
       role="combobox"
       aria-expanded="false"
       aria-autocomplete="list"
       aria-owns="search-suggestions"
       placeholder="Search papers...">
<ul id="search-suggestions" role="listbox" aria-label="Search suggestions">
  <li role="option" aria-selected="false">Climate Change 2021</li>
  <li role="option" aria-selected="false">Climate Change 2007</li>
</ul>
```

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Final Thoughts and Recommendations

Semantic Scholar demonstrates a strong foundation for accessibility with properly labeled form controls, appropriate hiding of decorative images, and functional keyboard navigation in many areas. However, several critical accessibility barriers prevent full compliance with WCAG 2.2 AA standards and create significant usability challenges for users with disabilities.

The platform's search functionality, while powerful, lacks essential accessibility features such as live region announcements and proper state management. The PDF documents accessed through the platform represent a significant accessibility gap, lacking the structural markup necessary for screen reader navigation.

Recommended Fixes

- **Implement proper heading structure:** Add H1 headings to all main pages and ensure logical heading hierarchy throughout the platform.
- **Add live region announcements:** Implement aria-live regions to announce search result changes, filter applications, and other dynamic content updates.
- **Fix focus management:** Ensure focus remains contextually appropriate when interacting with filters and accordions, avoiding unexpected jumps to page top.
- **Improve combo box implementation:** Properly implement search suggestions as combo box with appropriate ARIA attributes and keyboard navigation.
- **Add filter state announcements:** Ensure applied filters are announced to screen readers and their current state is communicated clearly.
- **Enhance PDF accessibility:** Work with document authors to ensure PDFs include proper structural markup, including headings, tables, and alternative text.
- **Implement proper list structure:** Code search results as proper lists with appropriate markup to convey relationships between items.
- **Add comprehensive status messages:** Provide clear feedback when users perform actions, including successful filter applications and search refinements.

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Disclaimer

Accessiblü prepared this report as a high-level accessibility evaluation of the Semantic Scholar platform. The evaluation utilized industry-standard testing methodologies, including screen reader testing (JAWS 2025), keyboard-only navigation, and manual inspection for select WCAG 2.2 AA success criteria.

This report does not represent a comprehensive WCAG compliance audit and should not be seen as a certification of accessibility compliance. While we have identified significant accessibility concerns and usability barriers, this evaluation was limited in scope and may not encompass all accessibility issues on the platform.

No Legal Liability: Accessiblü offers this report for informational purposes only. It assumes no legal responsibility for accessibility violations or compliance failures resulting from its use. Organizations seeking formal certification should conduct a comprehensive audit and user testing with individuals with disabilities.

Limitations of Testing: This evaluation was conducted at a specific time, and platform updates may have occurred after testing was completed. Additionally, while automated tools and expert reviews were utilized, real-world users with disabilities determine the true measure of accessibility.