Web Accessibility Report: Universal Robots

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Executive Summary

Universal Robots (UR) is a pioneer in collaborative robots, known for its user-friendly automation solutions. The company caters primarily to industrial automation companies. A comprehensive assessment uncovered many accessibility flaws, most notably regarding text alternatives, proper labeling, form accessibility, and their website structure. Methods to uncover these flaws includes W3C's "Easy Checks", a cognitive level test, automated evaluations (using WAVE and Google Lighthouse), and a personal screen reader (NVDA) experience. UR should prioritize offering thorough alt-text, descriptive labels, keyboard accessibility, and error identification to improve accessibility on their forms and website. Ensuring a smooth and accessible browsing experience for people with disabilities also requires improvements in the use of ARIA, color contrast, and general content readability.

Introduction

Universal Robots (UR) is one of the global leaders in collaborative robots (cobots). In addition to their cobots, UR has developed some of the most advanced automation solutions available. BMW, along with other leading companies, has recognized UR for their user-friendly and flexible design, integrating them into production processes to improve efficiency and safety (BMW Group, 2013). Any further investigation into UR and their motivations as a company shows that they are committed to be reliable and innovative in both the automation and robotics field.

Services

The primary function of the website is to display the various products they have including individual cobots, attachments/tools for them, and full kits for your application. Additional website services include event calendars, e-Learning courses, and customer service. The UR website is the home for customers and fans, both current and potential.

Audience

UR appears to target enterprises in the industrial automation field, looking to optimize their production without investing too heavily into robotics. While you might find large factories using UR's cobots, a few applications use smaller scale cobots in an office setting. It also seems that UR is interested in emerging applications as the desire for automation grows into new fields.

Methods and Tools

For this assessment, I reviewed both the Universal Robots homepage and the product page for their UR10e cobot, see the Appendix for current screenshots. I have done my assessment in Google Chrome as of October 2023. For the accessibility evaluation, I followed and used the guidelines and tools below:

W3C "Easy Checks"

The first list I used comes from W3C with "Easy Checks" – A First Review of Web Accessibility. These are preliminary checks that all websites should consider before publishing their website.

Readability Level (Cognitive Level Test)

All text assessment for this method involved the usage of Readable. This method involves copying and pasting text found on UR's website to make sure it is at an 8th grade reading level or below.

Automated Evaluations (WAVE and Google Lighthouse)

For the automated tools, I used the WAVE Google Chrome extension and Google's built-in tool, Lighthouse, to evaluate UR's website against the POUR guidelines.

ARIA Assessment

I used Axe DevTools to identify if the website's usage of ARIA is correct in addition to WAVE and Google Lighthouse. However, I also manually checked it using Google Chrome's "View Source" functionality to view their code. I referenced Mozilla's documentation on ARIA to ensure that their usage is correct and consistent with the standards.

Screen Reader Experience

To check how a screen reader functions on the UR website, I used the popular reader, NVDA. This is a personal experience rather than a true evaluation. By attempting to use their website with a screen reader, I can determine if a screen reader user would be able to access the website effectively.

Findings

The following section organizes discoveries according to the POUR guidelines (Perceivable, Operable, Understandable, Robust). This includes findings from the "Easy Checks" process, the ARIA assessment, readability level, and the automated evaluations.

Perceivable

1.1 Text Alternatives

1.1.1 Non-text Content

- This is a major issue across both pages (and seemingly the entire website). The website appears to use "alt" tags as labels. The tags simply reiterate the header associated with the image rather than describing what the image is. Anyone who visits the site with a screen reader would receive little to no information about any image on this site.
- Many buttons also fail to have alternate text to describe the purpose of the button. 13 buttons on the homepage and 6 on the selected product page do not have alternate text.
- Labels are not present on the form inputs. See 3.3.2 for more information.

1.2 Time-based Media

- Pre-recorded videos on both pages lack a transcript for audio and a descriptive transcript to describe the video. Additionally, videos do not offer captions to those who need them. No sign language video is available to visitors as well.

1.3 Adaptable

1.3.1 Info and Relationships

- The website uses proper headers throughout, but it falls short when maintaining a logical order and hierarchical structure. Most failures come from headers skipping a level or two (i.e., <h1> to <h3> and <h1> to <h4>).

- Labels are not present on the form inputs. See 3.3.2 for more information.

1.3.5 Identify Input Purpose

- The “Request a quote” form does not offer an autocomplete option for common information input fields.

1.3.6 Identify Purpose

- There are a few ARIA problems across both pages. The main one includes the “play” button tag being incorrect. See 4.1.2 Name, Value, Role for more detail.

1.4 Distinguishable

1.4.3 Contrast (Minimum) & 1.4.6 Contrast (Enhanced)

- Link text in the footer fails both 1.4.3 and 1.4.6 for color contrast. All links in the footer on both pages fail to fall in the contrast range required to pass.

1.4.7 Low or No Background Audio

- For the video on the homepage, some users may consider the music in the video too loud while there is speech.

Operable

2.1 Keyboard Accessible

2.1.1 Keyboard

- Drop-down input boxes on the “Request a quote” form are not accessible with a keyboard.

2.3 Seizures

- Both webpages adhere to the recommendations limiting automatic animations, auto playing videos, and any unnecessary movements.
- However, the opening/closing of the video on the homepage does have a potentially seizure inducing visualization. This presents an opportunity for further investigation.

2.4 Navigable

2.4.1 Bypass Blocks

- The website does not have an option to skip over the repeated navigation menu across the website to the main content.

2.4.2 Page Titled

- The homepage title is inconsistent with what we consider a good page title. There is no indication that it is the homepage. Their product page is a good example however, as it gives the name of the product (robot) and two distinguishing words.

2.4.4 Link Purpose (In Context)

- All social media links in the footer as well as the company logo at the top of both pages are empty and have no text to describe what the link is for.
- WAVE alerted that there are a few links that appear suspicious. Many of which were “Read more” links.

2.4.6 Headings and Labels

- There are good and bad labels on this website. While most accurately describe the sections they represent, some headings fall short of being descriptive, rather they are slightly more narrative in nature. While this may be a subjective assessment, this could serve as a chance for review.
- Labels are not present on the form inputs. See 3.3.2 for more information.

2.4.9 Link Purpose (Link Only)

- Multiple "Read more" buttons are present. While most other links across the webpages have unique descriptive text, these buttons do not describe what the user is reading more about.

2.5 Keyboard Navigation

2.5.3 Label in Name

- Multiple buttons across both pages do not have proper labels, therefore, they do not have the text of the button included in the accessible name. See 1.1.1 and 4.1.2 for more detail.

Understandable

3.1 Readable

3.1.4 Abbreviations

- There are multiple abbreviations across the site, none of which use the <abbr> tag to help users unfamiliar with the meaning.

3.1.5 Reading Level

- Most of the text on the homepage and selected product page exceed the standard recommendation of an 8th grade reading level. The readability varied from high school level (50-60) all the way to professional/college graduate (0-30); very few sections fell under the recommended standard.

3.3 Input Assistance

3.3.1 Error Identification

- While the website identifies errors in the "Request a quote" form, there is no supporting text to state why an error occurred.

3.3.2 Labels or Instructions

- Labels are not correctly associated on the "Request a quote" form. When you attempt to navigate these form fields with a screen reader, all it says is "blank".

3.3.3 Error Suggestion

- Form input errors do not provide a potential solution. For example, if you do not put "@gmail.com" on your email, you may expect the form to suggest adding it, but this website does not do that.

Robust

4.1 Compatible

4.1.2 Name, Role, Value

- ARIA attributes are using invalid terms on both pages for the search bar pop-up on smaller screens. The "aria-haspopup" attribute does not support, "searchbar" as a valid pop-up type.

- The ARIA “play” button over the videos on both pages lacks an accessible name. Screen readers may not be able to discern the purpose of a button without an accessible name.

Screen Reader Experience

While the website’s accuracy surprised me, there were still moments in which the screen reader seemingly ignored large sections of the webpages. The heading structure provided an easy way to get to major sections of information, but as a sighted user, I could see some sections ignored by the reader. Related to the ARIA errors, the “play” button over the videos came up quickly and only announced itself as “clickable button”. For someone who is not able to see what that button is for, you must take a risk to click a button that has no label, and you must trust the website is not taking advantage of you. On top of some small inconsistencies and mislabeling, there is work for UR to do. Overall, I believe someone who is blind or has low vision would be able to navigate these webpages, but they may be concerned/confused.

Recommendations

- Ensure all images have unique alt-text that describes the images for what they are, not the linked heading.
- All buttons should have proper labels with accessible names that describe the purpose of the button and the text on the button (if text is there).
- For all forms, any user input fields must have labels to indicate the purpose of the input. Screen readers are not able to distinguish the purpose of the input field without a label.
- Autocomplete should be available on forms with common information (i.e., name, email).
- The drop-down boxes on the “Request a quote” form are not accessible with a keyboard; you cannot access them without a mouse.
- Provide clear error identification and instructions for form fields. Offer suggestions for predictable input errors.
- For videos (including the one found on the homepage), provide captions when speech is present. Include a descriptive transcript as well to describe the content in the video since a person who is blind or has low vision is not able to see it.
- Review and revise headings on webpages to have a logical structure. You should not use headings for aesthetic purposes, skipping from <h1> to <h3> is potentially confusing if a screen reader user is looking for a 2nd level heading.
- There are a few issues with the usage of ARIA on the website. One instance across all pages for the searchbar uses an invalid attribute for ARIA. The “play” button lacks an accessible name for ARIA to use, resulting in an uninformed click for screen reader users.
- Links (social media icons, phone numbers, and the email) in the footer of the page violate color contrast standards. This means that some users may struggle to read and/or comprehend them.
- Review the opening/closing of the homepage video for potentially seizure inducing visuals.
- Provide an option to bypass the navigation menu since it repeats across all webpages.
- Review the accessibility of the text across the website. It should be at an 8th grade level or below.
- For any abbreviations, use the <abbr> tag to provide additional context for unfamiliar users.

References

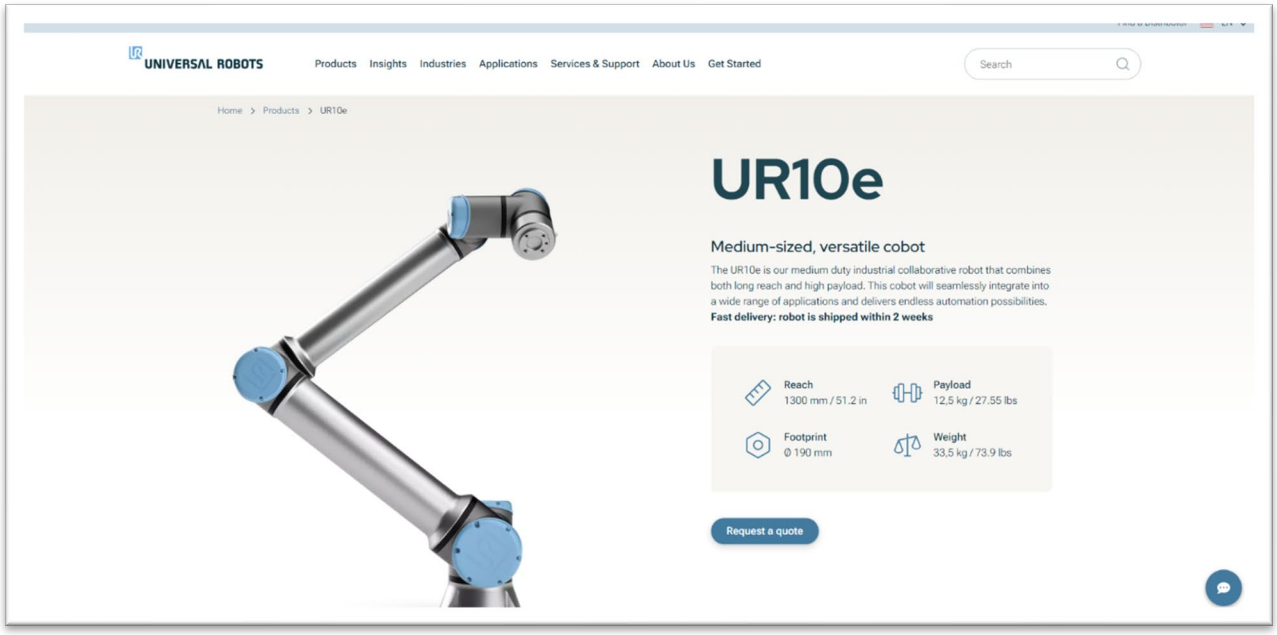
BMW Group. (2013, September 10). *Innovative human-robot cooperation in BMW Group production.* Retrieved from BMW Group Press: https://www.press.bmwgroup.com/global/article/detail/T0209722EN/innovative-human-robot-cooperation-in-bmw-group-production?language=en

Universal Robots A/S. (2023, October). Retrieved from Universal Robots: https://www.universal-robots.com/

Universal Robots A/S. (2023, October). *UR10e*. Retrieved from Universal Robots: https://www.universal-robots.com/products/ur10e/

Appendix

i. The Universal Robots website homepage (https://www.universal-robots.com/) as of October 2023



ii. The product page for the UR10e cobot (https://www.universal-robots.com/products/ur10e/) as of October 2023