

Performance Report for Cyber Jeff Website

<https://udon171.github.io/cyber-jeff/>

Prepared by: David Wells, Grok, xAI

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1 Executive Summary

This report provides a comprehensive analysis of the Cyber Jeff website (<https://udon171.github.io/cyber-jeff/>), a digital platform showcasing a state-of-the-art digital assistant, Cyber Jeff, and his robotic sidekick, Tooki. The website aims to engage users with a futuristic narrative and visually rich content. However, performance diagnostics reveal significant optimization opportunities, particularly in image sizing, modern image formats, Largest Contentful Paint (LCP), layout shifts, and render-blocking resources. Implementing the recommendations outlined in this report can reduce load times, enhance user experience, and improve mobile performance, potentially saving up to 31,489 KiB in data transfer and 480 ms in render time.

2 Website Overview

2.1 Purpose and Audience

The Cyber Jeff website introduces users to Cyber Jeff, a digital assistant designed for technological innovation and user interaction. The site targets tech enthusiasts, potential clients, and curious visitors interested in futuristic digital solutions. Its narrative-driven content and vibrant imagery aim to create an immersive experience.

2.2 Key Features

- **Hero Section:** Introduces Cyber Jeff with a bold headline and background image.
- **Visual Storytelling:** High-resolution images depict Cyber Jeff in various scenarios (e.g., modifying his mechanical hand, reading files, relaxing at the beach).
- **Responsive Design:** Adapts to different screen sizes, though performance on mobile devices needs improvement.
- **Interactive Elements:** Includes a reveal of Tooki, Cyber Jeff's robotic sidekick.

2.3 Technical Structure

The website is hosted on GitHub Pages and uses HTML, CSS, and JavaScript. It leverages external resources like Cloudflare CDN for Font Awesome icons and Google Fonts for typography. The site's assets include large PNG images and an AVIF image, contributing to its performance challenges.

3 Performance Diagnostics

Diagnostics reveal critical areas for optimization, impacting load times and user experience, especially on mobile devices. Below is a detailed analysis based on the provided data.

3.1 Properly Size Images

Large images significantly increase load times, with an estimated savings of 31,489 KiB if optimized. The following images require resizing:

Image Description	Resource Size (KiB)	Est. Savings (KiB)
Jeff modifying his mechanical hand	11,353.8	11,294.2
Jeff reading a file	10,353.9	10,299.3
Jeff out at the beach on holiday	7,035.0	6,998.6
Jeff sitting in the office ready for action	1,538.5	1,484.5
First time reveal of Tooki	1,429.2	1,379.0
Cyber Hand Portrait	39.7	33.6

3.2 Serve Images in Next-Gen Formats

Using modern formats like WebP or AVIF can save up to 28,192 KiB. Most images are in PNG format, which is less efficient than WebP or AVIF. The Cyber Hand Portrait uses AVIF, but further compression is possible.

Image Description	Resource Size (KiB)	Est. Savings (KiB)
Jeff modifying his mechanical hand	11,353.8	10,229.8
Jeff reading a file	10,353.9	9,235.8
Jeff out at the beach on holiday	7,035.0	5,895.4
Jeff sitting in the office ready for action	1,538.5	1,453.5
First time reveal of Tooki	1,429.2	1,344.1
Background image (geo-of-squares.jpg)	127.1	32.8

3.3 Largest Contentful Paint (LCP)

The LCP is 25,550 ms, far exceeding the recommended 2,500 ms. The hero section (<section class="hero" id="hero">) is the largest contentful element, with the following breakdown:

- **TTFB:** 170 ms (1%)
- **Load Delay:** 2,750 ms (11%)
- **Load Time:** 21,390 ms (84%)
- **Render Delay:** 1,240 ms (5%)

The prolonged load time is primarily due to large images and render-blocking resources.

3.4 Avoid Large Layout Shifts

One significant layout shift (score: 0.116) occurs in the hero content (<div class="hero-con likely due to dynamic image loading or font rendering. This affects the Cumulative Layout Shift (CLS) score, which should be below 0.1.

3.5 Eliminate Render-Blocking Resources

External resources delay the first paint by approximately 480 ms:

- **Cloudflare CDN (Font Awesome):** 11.2 KiB, 200 ms savings.
- **Google Fonts:** 2.7 KiB, 200 ms savings.

4 Recommendations

Based on the diagnostics, the following actionable steps can enhance the website's performance:

4.1 Optimize Image Sizes

- Resize images to match display dimensions (e.g., reduce 11,353.8 KiB maintenance image to fit typical viewport sizes).
- Use tools like ImageMagick or online compressors (e.g., TinyPNG) to reduce file sizes without quality loss.
- Implement responsive images with `srcset` to serve smaller images for mobile devices.

4.2 Adopt Next-Gen Image Formats

- Convert PNG images to WebP or AVIF using tools like `convert` (ImageMagick) or online converters.
- Ensure fallback formats (e.g., JPEG) for browsers without WebP/AVIF support using the `<picture>` element.
- Example:

```
<picture>
  <source srcset="assets/images/maintance-jeff.webp" type="image/webp">
  
```

4.3 Improve Largest Contentful Paint

- Preload critical images in the hero section using `<link rel="preload">`.
- Optimize server response time by leveraging GitHub Pages' caching or migrating to a CDN.
- Minify HTML, CSS, and JavaScript to reduce load time.

4.4 Minimize Layout Shifts

- Set explicit dimensions (width and height) for images to prevent reflows:

```

```

- Use `font-display: swap` for Google Fonts to avoid font-induced shifts.

4.5 Eliminate Render-Blocking Resources

- Inline critical CSS for the hero section and defer non-critical styles:

```
<style>
  /* Critical CSS for above-the-fold content */
</style>
<link rel="stylesheet" href="css/all.min.css" media="print" onload="this.media='all'"/>
```

- Asynchronously load Google Fonts:

```
<link rel="preconnect" href="https://fonts.googleapis.com">
<link rel="stylesheet" href="https://fonts.googleapis.com/css2?family=Roboto:wght@400;700;900&family=Montserrat:wght@400;700;900&display=block">
```

- Consider self-hosting Font Awesome icons to reduce external dependencies.

5 Conclusion

The Cyber Jeff website offers an engaging user experience but faces significant performance challenges due to large images, inefficient formats, and render-blocking resources. By implementing the recommended optimizations—resizing images, adopting WebP/AVIF, improving LCP, minimizing layout shifts, and eliminating render-blocking resources—the website can achieve faster load times, better mobile performance, and an enhanced user experience. These changes will align the site with modern web performance standards, ensuring it effectively showcases Cyber Jeff and Tooki to its audience.