



JavaScript SEO

Training Course



Hi! We're Gray Dot Co

We're into JavaScript SEO. And Headless SEO.
And, really, all manner of needlessly complicated software stuff.



SAM TORRES

Chief Digital Officer
Data & dev nerd
SEO mermaid™



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Puzzle enthusiast



On behalf of Sitebulb & WTS

The very best sponsors we could ask for...



Sitebulb

Site Auditing Tool

Desktop & Cloud crawling

Famously swearsy release notes



WTS

Global Community

Tech SEO Nerds

Home to best members of all time



What this series covers

- Understanding JavaScript SEO ✓
- Auditing JS for SEO ✓
- Prioritizing & Explaining JS SEO Issues ✓
- JavaScript SEO for AI Search

[Did you miss the training?](#)



Rendering for Search & LLMs



Wait, I have to worry about rendering for LLMs, too?!





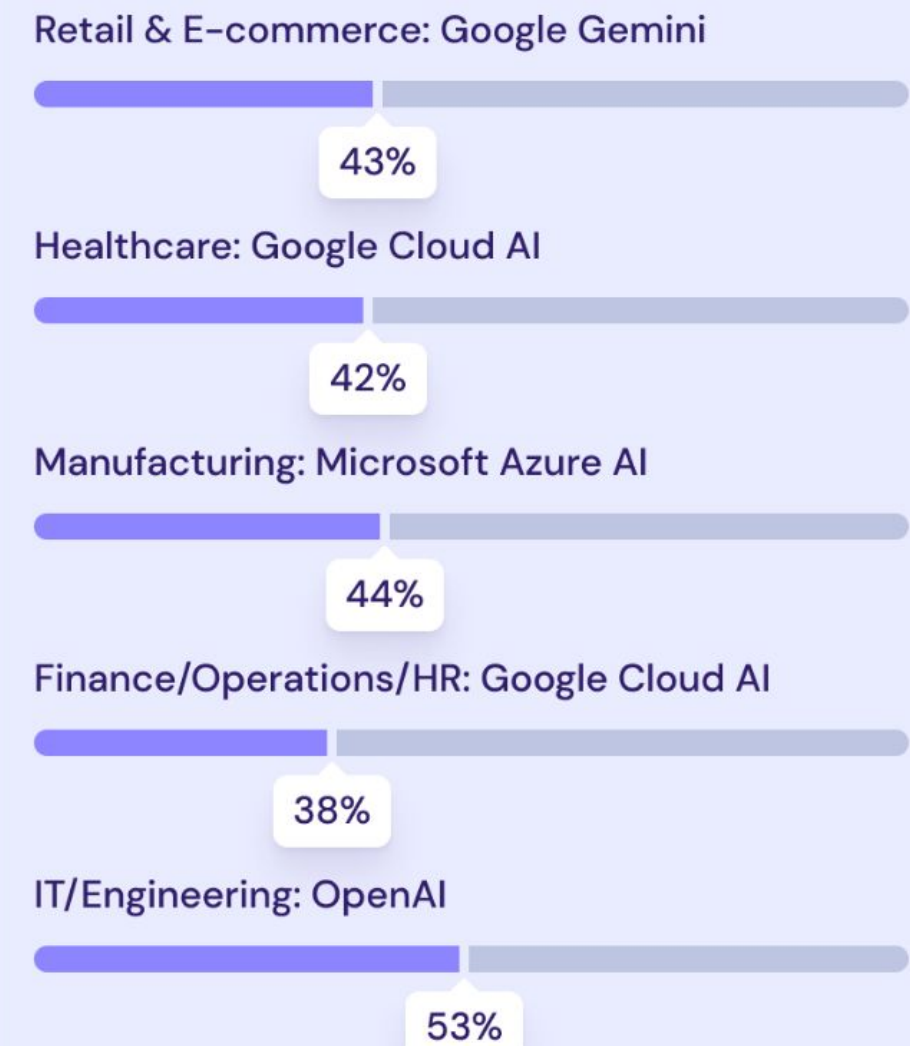
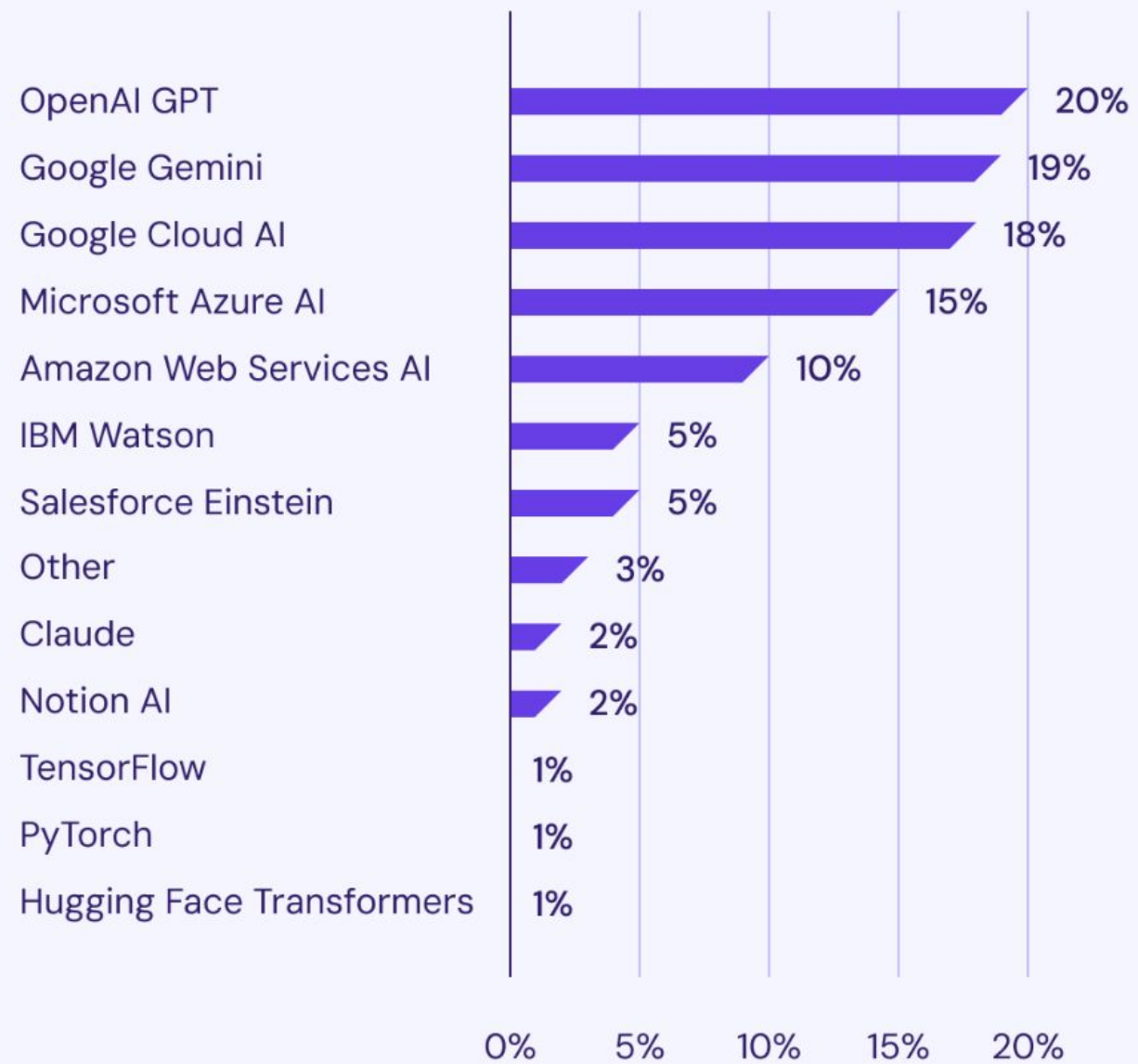
Why should you care?





***But first! Let's cover our bases,
including critical facts about LLMs today.***

What are the main LLMs?



What are their data sources?

Training Materials

Pre-ingested & pre-processed. Including: books, news, journals, wiki-data, UGC (Reddit, YouTube), webpages from “quality” sites.

The Live Web

Via MCP or RAG

- Uses APIs in “query fanouts” to search Google, Bing, etc.
- Can query specific web pages directly.

Live Feedback

- Some LLMs enable real-time feedback from users
- This feedback loop can alter future searches for that user, or other users

What's a query fanout?

When is the best time this week to schedule an outdoor engagement photoshoot in the boston public gardens?

What light do photographers prefer for outdoor shoots?

What's the best time to take outdoor photos?

What's this week's local forecast and will it rain?



Myriam Jessier • 1st

SEO & Brand Visibility Consultant (LLM & More) | Neurodiversity in Tech...

2d • 



LLM results are three Google searches in a trench coat.

[Credit: Myriam Jessier](#)

What are their data sources

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The Live Web

Via MCP or RAG

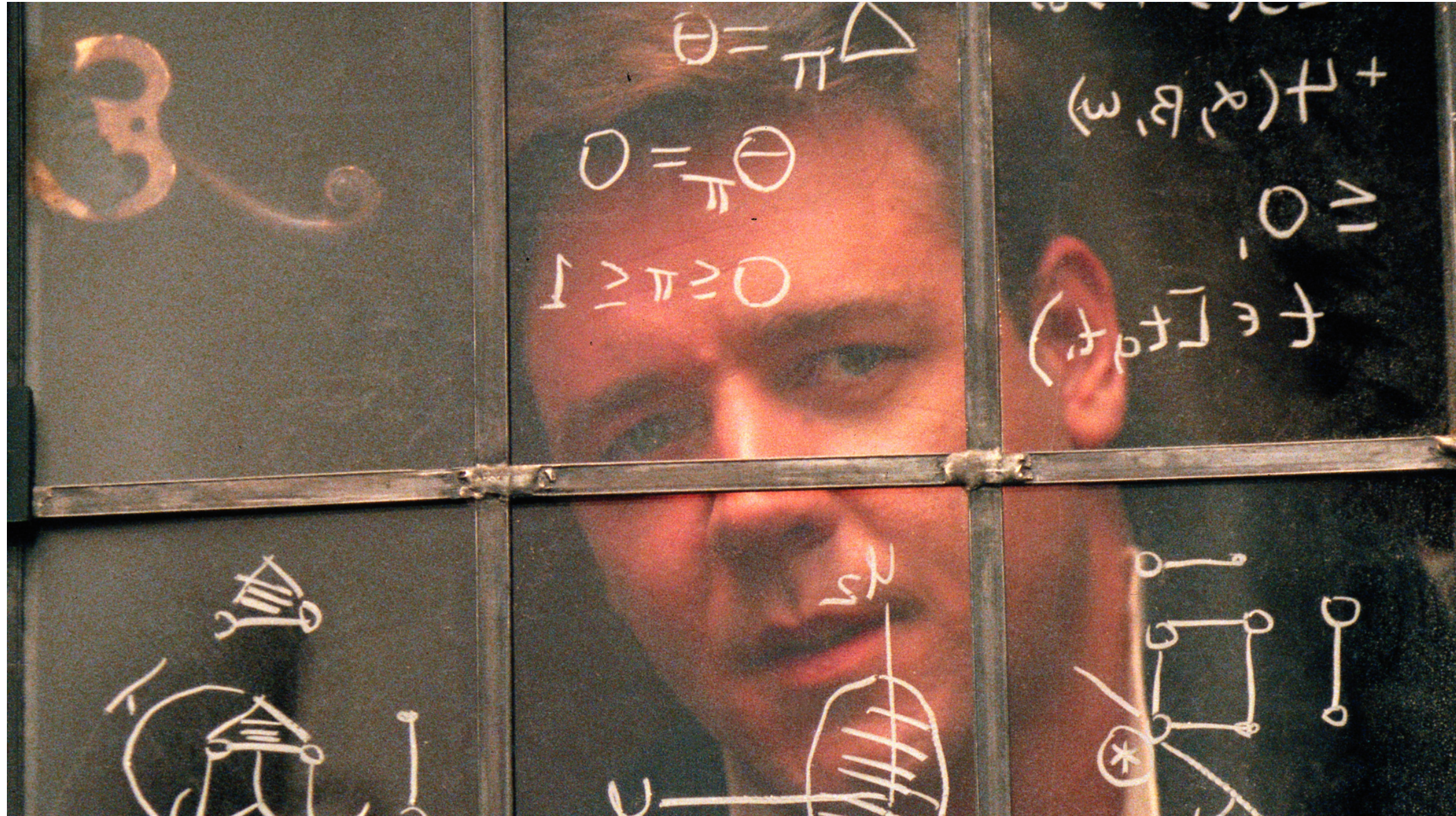
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Live feedback

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What do LLMs “see”?





If LLMs are looking at your site, what do they NOT see?



Rendered HTML



If LLMs are looking at your site, what do they see?

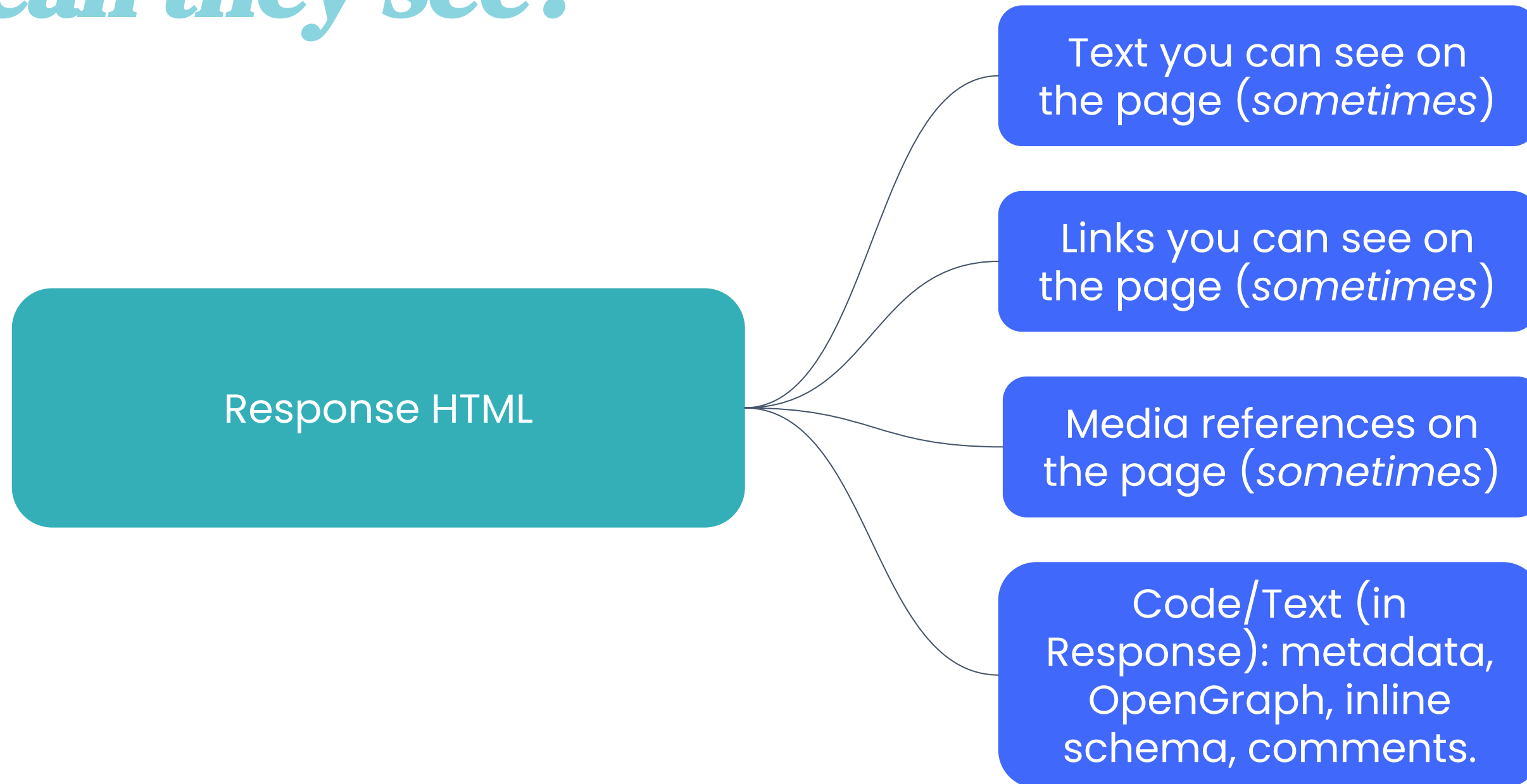


Response HTML



Let's talk details.

What can they see?





What do they use?

- Text ✓
- Links ✓
- Media ✓ ?
- Code: meta data, OGs, schema, comments ✓ ?



Example 1: Text you can see on the page

Can you fetch the page <https://thegray.company/> and tell me what text you see?

Here's the main text content I found on the homepage of **The Gray Dot Company** (<https://thegray.company/>), as displayed when I accessed it:

Home Page Highlights

- **Primary tagline:**
"Tomorrow's marketing, today."
- **Introduction:**
"We're a modern data and search marketing agency keeping brands two steps ahead in a landscape where flux is the only constant." thegray.company +2
- **"The difference is in the data" section:**
"Cut-and-paste formulas are falling short, pay-to-play is getting pricey, and search has SEOs scratching their heads. Is digital marketing dead? Far from it. Our intelligence-first approach taps into game-changing insights about your audience, brand, and market — making them the heart of meaningful strategies that break through the "meh." thegray.company +1
- ****"What We Do" overview**:**
Building solutions. Breaking silos.
Emphasizes connecting data, market insights, and search marketing to spark growth. thegray.company +3
- **Service categories:**

Example 1: ...Sometimes

The screenshot shows a web browser displaying the Crate & Barrel website. The URL in the address bar is <https://www.crateandbarrel.ca/?srsId=ARcRdnpaevX64O5XocF5-GYnU8CZSKSI83GXd0AGnn1VtMiVoPjxFmqP>. The website header includes navigation links for 'Crate&Barrel', 'Crate&kids', 'CB2', and a Canadian flag. A search bar is present with the placeholder text 'What can we help you find?'. Below the search bar, there are promotional banners for 'NEW!', 'WEDDING REGISTRY', 'FREE DESIGN SERVICES', and 'TRADE PROGRAM'. A dark navigation bar lists categories: 'Furniture', 'Outdoor', 'Tabletop & Bar', 'Kitchen', 'Bedding', 'Bath', and 'Decor'. Below this, there are two promotional banners: 'Fast, Free Shipping on Orders CAD 149+ >' and 'New! 1600+ Fall Arrivals >'. The main content area shows a blurred image of a room interior.

Overlaid on the right side of the browser is a rendering difference tool interface. It has tabs for 'Report', 'Headings', 'Links', 'Media', 'Page copy', and 'Difference'. The 'Page copy' tab is active. It shows a comparison of text between 'Response HTML' and 'Rendered HTML'. The 'WORDS' count is 1289 in the response and 3572 in the rendered version. An 'Export Copy' button is visible. The comparison table shows several differences:

Response HTML	Rendered HTML
Wedding Registry	Wedding Registry
	The Wedding Registry Get Started Create a Registry Find a Registry Manage My Registry Tips & Advice Most-Loved Gifts Interactive Registry Checklist Real Registries One-Click Registries Find Your Tabletop Style Most Forgotten Registry Items Private Registry Events FREE Design Services Wedding Registry Guides Refer a Friend, Get \$100 Top Categories Kitchen...
Free Design Services Trade Program Shop by Room Bestsellers The Residence Shop Halloween Furniture	Free Design Services Trade Program Shop by Room Bestsellers The Residence Shop Halloween Furniture
	New Furniture Living Room Furniture Sofa & Sectional Collections Sofas Sectional Sofas Accent Chairs Sleeper Sofas Coffee Tables Console Tables End & Side Tables TV Stands & Media Consoles Chaise Lounges & Daybeds Ottomans & Benches Leather Furniture

At the bottom of the tool, there are two status indicators: 'removed from Response HTML by Javascript' and 'added to Rendered HTML by Javascript'. The footer of the tool reads 'Response -> Render · Rendering Difference Engine by Gray Dot Co'.

What to look out for: text

Low Issue <h1> only in the rendered HTML

URLs: 16 ▲ 16 Percentage: 0.14% Indexable: 0 No Change Not Indexable: 16 No Change

URLs that contain an h1 only in the rendered HTML, after JavaScript execution. While Google is able to render pages and see client-side only content, it may be worth adding important content in the response HTML.

[Learn more about this hint](#) [Mark as Fixed](#) [View URLs](#) [Export URLs](#)

Low Issue <h1> modified by JavaScript

URLs: 1 No Change Percentage: 0.01% Indexable: 1 No Change Not Indexable: 0 No Change

URLs that have h1s that are modified by JavaScript. While Google is able to render pages and see client-side only content, it is worth double-checking that the rendered h1 is the one that you want website users (and search engines) to see.

[Learn more about this hint](#) [Mark as Fixed](#) [View URLs](#) [Export URLs](#)

Low Potential Issue Contains JavaScript content

URLs: 11.3K ▲ 11.2K Percentage: 99.9% Indexable: 8.8K No Change Not Indexable: 2.5K ▲ 2.5K

URLs that contain body text which is only discovered in the rendered HTML, after JavaScript execution. While Google is able to render pages and see client-side only content, it may be worth adding important content in the response HTML. Additionally, Google may not always be able to render pages correctly, or it may not be able to execute JavaScript at all.

[Learn more about this hint](#) [Mark as Fixed](#) [View URLs](#) [Export URLs](#)



What & How much text is missing still matters

UR	Content Words Render Status	JS Word Change (%)	No. Content Words (Response)	No. Content Words
100	Deleted	2.06	796	781
96	Created	6.6	1327	1412
98	Created	3.11	713	718
14	Deleted	-13.38	7152	6088
11	Deleted	-7.96	12352	11288
3	Deleted	-10.98	8820	7756
3	Deleted	-28.05	3155	2091
54	Created	6.96	1304	1388
98	Deleted	-55.76	1348	284
1	Created	136.36	31	36
17	Deleted	-10.27	9466	8402
98	Created	3.36	414	415

34 Add to Cart Chet White Ceramic Soap Dish/Sponge Holder Clearance CAD 13.99 reg. CAD 14.95	33 Add to Cart Chet White Ceramic Soap Dish/Sponge Holder Clearance CAD 13.99 reg. CAD 14.95
35 Add to Cart Eli White Ceramic Square Tissue Box Cover Clearance CAD 19.97 reg. CAD 36.95	34 Add to Cart Eli White Ceramic Square Tissue Box Cover Clearance CAD 19.97 reg. CAD 36.95
	35 Recently Viewed Products
	36 Brushed Brass Metal Picture Frame with Vertical White Mat 4x6
	37 Annie 72" Natural Storage Media Console by Leanne Ford
	38 Faux Forsythia Flower Stem 50"
	39 Breville 8-Luxe Precision Brewer Thermal Drip Coffee Maker in Stainless Steel
	40 Wren 14-oz. Matte Dark Grey Mug
	41 Easton Stainless Steel Muddler
	42 Oslo Cross-Back Natural Linen Organic Cotton Apron with Pocket
	43 Schott Zwiesel Level 18-Oz. All-Purpose Square Wine Glass
	44 Everyday Organic Cotton Percale White Standard Pillowcases, Set of 2
	45 Dune Large Black Metal Outdoor Lantern 32"
	46 Organic Cotton Ficus Green King Bed Coverlet
	47 Carter Large Sandstone Tealight Candle Holder
	48 Staub 8 Sesame 5-Qt. Essential French Oven
	49 Frost Small Metal Round Drink Table
	50 Paso Natural Teak Wood Outdoor Adirondack Chair
	51 Tondo 8.5" White-Washed Wood Salad Serving Bowl
	52 Dorm Turkish Organic Cotton Light Grey Bath Towel
	53 Hayes 2-Slot Black Marble Soap Tray
	54 Tate 20" Coat Tree
	55 Venezia Large Smoke Green Glass Tealight Candle Holder
	56 Annie 72" Whitewash Wood Storage Media Console by Leanne Ford
	57 Saabira White 15.5" Tall Indoor/Outdoor Planter
	58 Batten Natural Teak 5-Piece L-Shaped Outdoor Sectional Sofa with Cat Cushions
	59 Staub 8.5" Sesame Enamelled Cast Iron Traditional Deep Skillet

Example 2: Links in text you can see on the page

Report	Headings	Links	Media	Page copy	Difference
BODY LINKS: 57		NAV: 18	FOOTER: 18	Highlight valid links <input checked="" type="checkbox"/>	
URL FRAGMENTS (#!,#): 0					
Connect with an expert https://thegray.company/contact		Connect with an expert https://thegray.company/contact			
SEO Consulting > https://thegray.company/services/seo		SEO Consulting > https://thegray.company/services/seo			
PPC Consulting > https://thegray.company/services/paid-search		PPC Consulting > https://thegray.company/services/paid-search			
Content Marketing > https://thegray.company/services/content-marketing		Content Marketing > https://thegray.company/services/content-marketing			
Market Intelligence > https://thegray.company/digital-market-intelligence		Market Intelligence > https://thegray.company/digital-market-intelligence			
AUDITING > https://thegray.company/services/analytics-audits		AUDITING > https://thegray.company/services/analytics-audits			

Example 2: ...Sometimes

The screenshot shows a browser window with the URL `https://www.crateandbarrel.ca/?srsltid=ARcRdnpaevX64O5XocF5-GYnU8CZSKSI83GXd0AGnn1VtMiVoPJxFmqP`. The website header includes navigation links for **Crate&Barrel**, **Crate&kids**, **CB2**, and a Canadian flag. A search bar contains the text "What can we help you find?". Below the search bar are links for **NEW!**, **WEDDING REGISTRY**, **FREE DESIGN SERVICES**, and **TRADE PROGRAM**. A dark navigation bar lists categories: **Furniture**, **Outdoor**, **Tabletop & Bar**, **Kitchen**, **Bedding**, **Bath**, and **Deco**. Below this are promotional banners: "Fast, Free Shipping on Orders CAD 149+ >" and "New! 1600+ Fall Arrivals >".

The rendering difference overlay on the right shows the following data:

- Report | Headings | **Links** | Media | Page copy | Difference
- BODY LINKS: 164 → 796 | NAV: 21 → 649 | FOOTER: 35
- URL FRAGMENTS (#!,#): 4 → 15
- Highlight valid links

NEW! https://www.crateandbarrel.ca/whats-new/new-arrivals-by-category/	NEW! https://www.crateandbarrel.ca/whats-new/new-arrivals-by-category/
	Fall 2025 New Arrivals https://www.crateandbarrel.ca/whats-new/new-arrivals-by-category/
	Furniture https://www.crateandbarrel.ca/whats-new/new-arrivals-furniture/1
	Kitchen https://www.crateandbarrel.ca/whats-new/new-arrivals-kitchen/
	Tabletop & Bar https://www.crateandbarrel.ca/whats-new/new-arrivals-tabletop/1
	Bedding & Bath https://www.crateandbarrel.ca/whats-

removed from Response HTML by Javascript | added to Rendered HTML by Javascript

Response → Render · Rendering Difference Engine by Gray Dot Co

What to look out for: links

Low Potential Issue **Contains JavaScript links**

URLs: 3.9K ▲ 3.9K Percentage: 34.73% Indexable: 3.9K No Change Not Indexable: 16 No Change

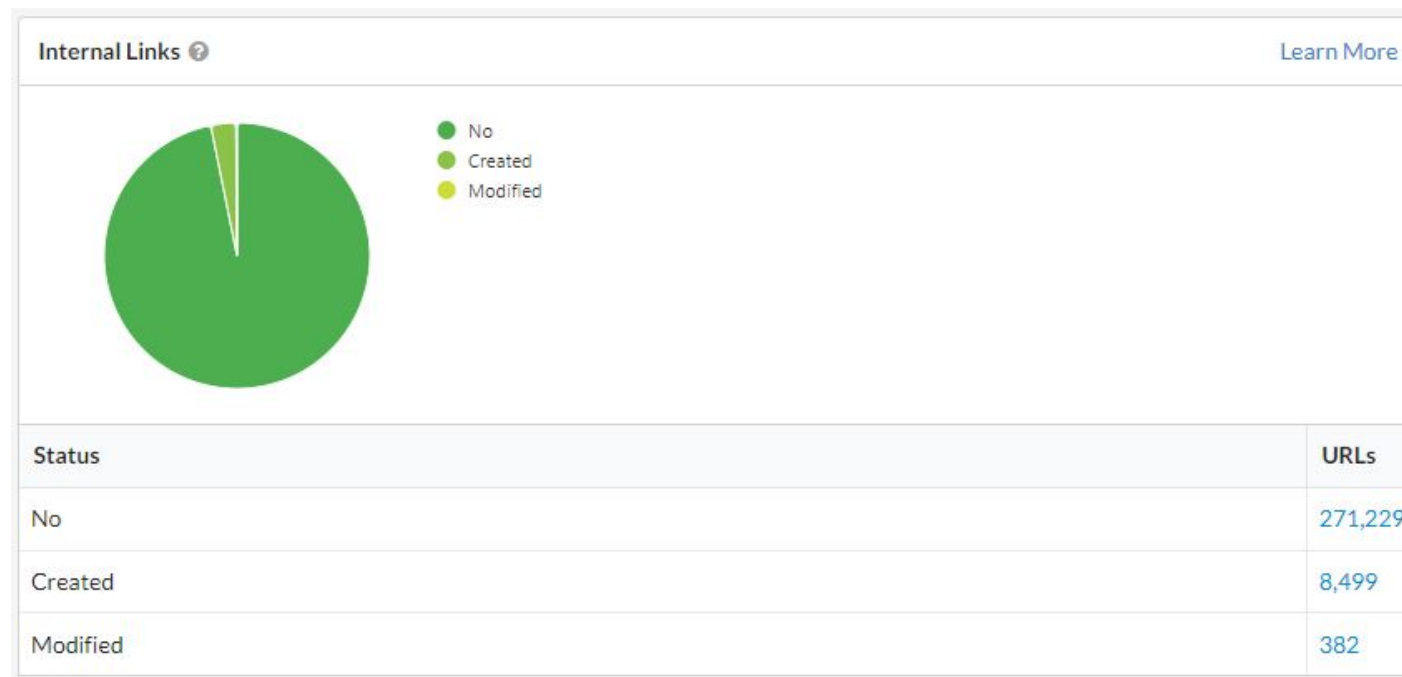
URLs that contain hyperlinks which are only discovered in the rendered HTML, after JavaScript execution. When Google crawl new pages, they initially parse the response HTML and collect links to add to the crawl queue, before rendering occurs - so if links are not present in the response HTML, this may slow down how quickly Google finds and indexes the linked URLs.

[Learn more about this hint](#)

✓ Mark as Fixed

👁 View URLs

📄 Export URLs





Example 3: Code, text in response (not user-visible)

```
'><!-- Primary Meta Tags --><title>Tomorrow's Marketing, Today | Gray Dot Co, an SEO + data company</title>

<!-- Open Graph / Facebook --><meta property="og:type" content="website"><meta property="og:url" content="https://thegray.company/"><meta property="og:
{
  "@context": "https://schema.org",
  "@type": "Organization",
  "name": "Gray Dot Co",
  "alternateName": "The Gray Dot Company",
  "url": "https://thegray.company",
  "logo": "https://assets.thegray.company/f/1016570/581x126/f122951287/graydotco.png",
  "telephone": "+1 (720) 593-1855",
  "contactPoint": {
    "url": "https://thegray.company/contact",
    "name": "Contact The Gray Dot Company",
    "description": "Contact the team at The Gray Dot Company to answer questions about how we",
    "telephone": "+1-720-593-1855",
    "email": "hello@thegray.company",
    "contactType": "sales",
    "hoursAvailable": {
      "@type": "OpeningHoursSpecification",
      "name": "The Gray Dot Company Hours",
      "closes": "17:00:00",
      "dayOfWeek": [
        "Friday", "Monday", "Tuesday", "Wednesday", "Thursday", "Friday"
      ],
      "opens": "09:00:00"
    }
  }
}
```

Example 3: Code, text in response (not user-visible)

(...may be)

Major takeaway: No `<a href>`, no link.

- Can follow: `Anchor Text`
- Can't follow:
 - ``
 - ``
 - ``

```
<div class="content" data-bbox="207 656 775 734">  
  <div data-bbox="207 678 775 734">  
    <div data-bbox="207 678 775 708">  
      <div data-bbox="207 678 775 708">ntered-content headline="..." heading-tag="h1" copy="..."</div>  
    </div>  
  </div>  
</div>
```

```
138 <div data-bbox="207 789 775 819">  
139 <div data-bbox="207 819 775 849">  
140 <div data-bbox="207 819 775 849">graphy slot">... projects,  
141 <div data-bbox="207 849 775 879">-section slot="section" headline="Typical duties of a ...":>  
142 <div data-bbox="207 879 775 909">graphy slot">...-item-base slot="item">Developing, designing ar
```

Example 3: Code, text in response (not

```
//Code sanitized to protect the foolish.
using System;
using System.Collections.Generic;
using System.Text;
using System.Reflection;
using System.Web.UI;

namespace Mobile.Web.Control
{
    /// <summary>
    /// Class used to work around Richard being a Richard idiot
    /// </summary>
    /// <remarks>
    /// The point of this is to work around his poor design so that paging v
    /// work on a mobile control. The main problem is the BindCompany() meth
    /// which he hoped would be able to do everything. I hope he dies.
    /// </remarks>
    public abstract class RichardIsARichardIdiotControl : MobileBaseControl
    {
        protected abstract Pager Pager { get; }

        public void BindCompany(int companyId) { }

        public RichardIsARichardIdiotControl()
        {
```

```
/**
 * For the brave souls who get this far: You are the chosen ones,
 * the valiant knights of programming who toil away, without rest,
 * fixing our most awful code. To you, true saviors, kings of men,
 * I say this: never gonna give you up, never gonna let you down,
 * never gonna run around and desert you. Never gonna make you cry,
 * never gonna say goodbye. Never gonna tell a lie and hurt you.
 */
```



What to look out for

- Embarrassing
- Inaccurate (i.e. April Fools jokes)
- Confidential/proprietary
- PII & privacy-related
- Changes/additions (critical info added/altered with JS)



***Remember the Golden Rule of LLMs:
If it's rendered, it
doesn't (dependably) count.***



Exceptions to the rule

- Consistent state of change: TBD / TBA
 - Gemini can access rendered training data (Google-powered)
 - LLMs could develop the tech, partner with others, enter partnerships, etc.
- If and when they do render, normal JavaScript SEO auditing rules may apply
 - <https://sitebulb.com/javascript-seo-training/>
- Additional reading:
 - <https://vercel.com/blog/the-rise-of-the-ai-crawler>





What actions should we take now?

1. Audit to understand what's in the response HTML
2. Audit to understand what's in the rendered HTML
3. Determine what, if anything, is missing (and if/when you care)
4. How do you do that? Oh yeah! This training!
>><https://sitebulb.com/javascript-seo-training/>
5. Tools? Sitebulb, Rendering Difference Engine



How do we stay on top of this insight?

1. Keep up on LLM shifts & changes.
 - Subscribe to Women in Tech SEO newsletter
 - Follow WTS, Sitebulb, Gray Dot & more
2. Build out your toolbox & roadmap.
 - Tools to audit differences
 - Prioritize the rendering improvements that matter to you



Questions?

Share in the comments!



Thank you!

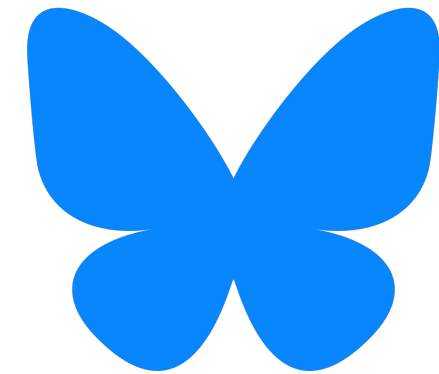


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