API Specification Document

(SEO Optimization Application)

Version	Date	Author	Description
1.0	28-Jan-2025	Ankit (ankit.j@olatechs.com)	Initial draft

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1. Analyze Page (Main Function that calls all the functions for analysis)

Analyzes the specified web page and returns various SEO and content-related metrics.

Request

Method	URL
GET	api/analyze_page

Params	Values
url	String, required

GET http://localhost:8000/api/analyze/?url=<url_here>

Response

Status	Response
200	```{

    "task_id": "abc12345-6789-def0-ghij-klmnopqrstuv",

    "status_check_url": "http://localhost:8000/api/result/abc12345-6789-def0-ghij-klmnopqrstuv/"

}``` |

	The request is queued immediately using Celery. Django does not wait for the analysis to complete.
400	{"error":"Returns an error message if the URL is not provided or if fetching the page fails."}

2. Poll for Task Status & Result

Analyzes the specified web page and returns various SEO and content-related metrics.

Request

Method	URL
GET	/api/result/<task_id>/

Params	Values
task_id	String, required

GET

http://localhost:8000//api/result/abc12345-6789-def0-ghij-klmnopqrstuv/

Response

Status	Response
200	**While processing:**

| | ```
{ "status": "pending" }


If failed:


{

  "status": "failed",

  "error": "Timeout while fetching page"

}


If complete:


{

  "status": "success",

  "data": {

    "on_page_optimization": "...",

    "meta_tags": "...",

    ...

  }

}
``` |
| 400 | {"error":"Returns an error message if the URL is not provided or if fetching the page fails."} |

Flow

1. **User requests analysis of URL → Django**

2. **Django queues task in Redis via Celery**

3. **Celery workers pick up tasks and run analysis (Selenium + NLP + SEO checks)**

4. **Results are stored back in Redis**

5. **User polls with task_id to get result**

2. On Page Optimization (Headings)

Analyzes the on-page SEO elements, including headings and keyword density.

Request

Method	URL
POST	api/analyze_on_page_optimization

Params	Values
content	string

Response

Status	Response
200	`"on_page_optimization": {`

```
        "headings": {
            "h1": [
                "Stop wasting money in Google Ads."
            ],
            "h2": [
                "Get a true readon your performance",
                "Get ready to grow your business.",
                "Seize your potential",
                "Step-By-Step Pay Per Click Tutorial",
                "Keyword Research Made Fast and Easy",
                "The WordStream Blog",
                "Learn More About Marketing",
                "Our best tips and tricks, straight to your
inbox"
            ],
            "h3": [
                "Get an instant audit of your account with
the Free Google Ads Performance Grader.",
                "133M",
                "267M",
                "$15.9B",
                "5 Ways You\u2019re Losing Money in Google
Ads (Without Even Knowing It!)",
                "More Articles",
                "10 Instantly Helpful Ways to Use AI in
Marketing From the Pros",
                "50+ Creative February Marketing Ideas
(Beyond Valentine's Day!)",
                "The 11 Best SMART Goal Examples for
Business",
                "6 Easy Ways to Save Money in Google Ads
NOW!",
                "The Last Guide to Google Ads Account
Structure You'll Ever Need",
                "PPC 101: A Beginner's Guide to PPC",
                "Sign up for our weekly newsletter and get
```

```
the insights you need to learn and grow!"
        ],
        "h4": [
                "Google AdsPerformance Grader",
                "Facebook AdsPerformance Grader",
                "FreeKeyword Tool",
                "FreeWebsite Grader",
                "Guides",
                "Recommended Reads",
                "PPC 101",
                "Recent Articles",
                "FOR BUSINESSES",
                "FOR AGENCIES",
                "Free Tools",
                "Explore Topics",
                "Learn",
                "Marketing Tips",
                "Company",
                "Contact Us"
        ],
        "h5": [
                "The Google Ads Performance Grader",
                "PPC 101: COMPLETE GUIDE TO GOOGLE ADS",
                "THE FREE KEYWORD TOOL"
        ],
        "h6": []
    },
    "keyword_density": 0.06741951795044665
  }
```

3. analyze_h1_tag

Checks for the presence and consistency of H1 tags.

Request

Method	URL
POST	api/analyze_hi_tag

Params	Values
content	string

Response

Status	Response

200	```
	    "h1_tag": {
	        "h1_found": true,
	        "h1_text": "Stop wasting money in Google Ads.",
	        "title_text": "WordStream
		Online Advertising Made Easy"
		        "title_vs_h1": false
		    },
		``

4. Schema Validation (using schema.org)

Validates schema.org structured data in the page content.

Request

Method	URL
GET	api/validate_schema

Params	Values
content	string

Response

Status	Response
| 200 | ```json
"schema_validation": [
        {
            "type": null,
            "content": {
                "@context": "https://schema.org",
                "@graph": [
                    {
                        "@type": "WebPage",
                        "@id": "https://www.wordstream.com/",
                        "url": "https://www.wordstream.com/",
                        "name": "WordStream | Online Advertising
Made Easy",
                        "isPartOf": {
                            "@id":
"https://www.wordstream.com/#website"
                        },
                        "about": {
                            "@id":
``` |

```
"https://www.wordstream.com/#organization"
                            },
                            "primaryImageOfPage": {
                                "@id":
"https://www.wordstream.com/#primaryimage"
                            },
                            "image": {
                                "@id":
"https://www.wordstream.com/#primaryimage"
                            },
                            "thumbnailUrl":
"https://www.wordstream.com/wp-content/uploads/2023/07/wordstrea
m-featured-share-image-july2023-v2.png",
                            "datePublished":
"2023-07-26T17:25:24+00:00",
                            "dateModified":
"2024-08-05T15:17:21+00:00",
                            "description": "WordStream makes online
advertising easy! Our blog, free tools and learning resources
can help you master digital advertising and grow your
business.",
                            "breadcrumb": {
                                "@id":
"https://www.wordstream.com/#breadcrumb"
                            },
                            "inLanguage": "en-US",
                            "potentialAction": [
                                {
                                    "@type": "ReadAction",
                                    "target": [
                                        "https://www.wordstream.com/"
                                    ]
                                }
                            ]
                        },
                        {
```

```
                    "@type": "ImageObject",
                    "inLanguage": "en-US",
                    "@id":
"https://www.wordstream.com/#primaryimage",
                    "url":
"https://www.wordstream.com/wp-content/uploads/2023/07/wordstrea
m-featured-share-image-july2023-v2.png",
                    "contentUrl":
"https://www.wordstream.com/wp-content/uploads/2023/07/wordstrea
m-featured-share-image-july2023-v2.png",
                    "width": 1024,
                    "height": 512
                },
                {
                    "@type": "BreadcrumbList",
                    "@id":
"https://www.wordstream.com/#breadcrumb",
                    "itemListElement": [
                        {
                            "@type": "ListItem",
                            "position": 1,
                            "name": "Home"
                        }
                    ]
                },
                {
                    "@type": "WebSite",
                    "@id":
"https://www.wordstream.com/#website",
                    "url": "https://www.wordstream.com/",
                    "name": "WordStream",
                    "description": "By LocaliQ",
                    "publisher": {
                        "@id":
"https://www.wordstream.com/#organization"
                    },
```

```
                        "potentialAction": [
                            {
                                "@type": "SearchAction",
                                "target": {
                                    "@type": "EntryPoint",
                                    "urlTemplate":
"https://www.wordstream.com/?s={search_term_string}"
                                },
                                "query-input": "required
name=search_term_string"
                            }
                        ],
                        "inLanguage": "en-US"
                    },
                    {
                        "@type": "Organization",
                        "@id":
"https://www.wordstream.com/#organization",
                        "name": "WordStream",
                        "url": "https://www.wordstream.com/",
                        "logo": {
                            "@type": "ImageObject",
                            "inLanguage": "en-US",
                            "@id":
"https://www.wordstream.com/#/schema/logo/image/",
                            "url":
"https://www.wordstream.com/wp-content/uploads/2024/10/WordStrea
m-logo-square-yoast.png",
                            "contentUrl":
"https://www.wordstream.com/wp-content/uploads/2024/10/WordStrea
m-logo-square-yoast.png",
                            "width": 400,
                            "height": 400,
                            "caption": "WordStream"
                        },
                        "image": {
```

```
                                "@id":
"https://www.wordstream.com/#/schema/logo/image/"
                            },
                            "sameAs": [

"https://www.facebook.com/WordStream",
                                "https://twitter.com/WordStream",

"https://www.linkedin.com/companies/wordstream",

"https://www.youtube.com/channel/UCrvBaHMLtSQ55IWAZiRQuQQ",
                                "https://www.instagram.com/localiq/"
                        ]
                    }
                ]
            }
        }
    ],
```

5. AI Content Detection

Detects AI-generated content and provides readability scores. Using HuggingFace Transformer
T-5(small) paraphrasing model.

Request

Method	URL
POST	api/detect_ai_content

Params	Values

content	string

Response

Status	Response
200	<div style="background:#1a1a1a">
```
    "ai_content_detection": {
        "ai_detected": true,
        "readability_score": -78.21,
        "human_suggestion": "Hootsuite makes it easy.Start your
free trialSave time and get REAL results on social media. Read
the reportWhat can Hootsuite do for you?636increase in reach,
year over year500growth across all social channels250increase in
sourced revenue, year over year250increase in sourced revenue,
year over yearExplore Hootsuite features Whats in the
dashboard?Schedule, engage, monitor, and analyze social media
posts. All in one userfriendly dashboard"
    },
```
</div> |
| | ● **Human Suggestion is based on T-5 (Small) paraphrasing model using Huggingface LLM, accurate for sites with unique HTML structure or applications made in different Web Frameworks.** |

6. Page Speed Analysis [API Used]

Analyzes the page speed using Google PageSpeed Insights.

Request

Method	URL
POST	api/analyze_page_speed

Params	Values
url	string

Response

Status	Response

200	```json
	    "page_speed": {
	        "Performance_Score": 0.77,
	        "First_Contentful_Paint": "0.6\u00a0s",
	        "Speed_Index": "1.3\u00a0s",
	        "Largest_Contentful_Paint": "1.1\u00a0s",
	        "Cumulative_Layout_Shift": "0.005",
	        "Time_to_Interactive": "4.5\u00a0s",
	        "Total_Blocking_Time": "450\u00a0ms"
	    },
	``

7. Meta Tags and Keywords Suggestions

Checks meta tags and suggests keywords.

Request

Method	URL
POST	api/check_meta_tags

Params	Values
content	string

Response

Status	Response

200	<pre>"meta_tags": {
	        "meta_description": "WordStream makes online advertising
	easy! Our blog, free tools and learning resources can help you
	master digital advertising and grow your business.",
	        "meta_keywords": null,
	        "irrelevant_keywords": [],
	        "suggested_keywords": [
	            "101",
	            "account",
	            "ads",
	            "best",
	            "blog",
	            "easy",
	            "facebook",
	            "free",
	            "google",
	            "grader",
	            "guide",
	            "keyword",
	            "keywords",
	            "learn",
	            "marketing",
	            "money",
	            "performance",
	            "ppc",
	            "solutions",
	            "ways"</pre>

```
        ]
    },
```

8. Keyword Summary

Analyzes and summarizes keywords from the page content.

Request

Method	URL
POST	api/analyze_keyword_summary

Params	Values
content	string

Response

Status	Response

200	`"keyword_summary": {`
	`    "top_keywords": [`
	`        {`
	`            "keyword": "ads",`

```
                "score": 28
            },
            {
                "keyword": "google",
                "score": 23
            },
            {
                "keyword": "free",
                "score": 15
            },
            {
                "keyword": "marketing",
                "score": 15
            },
            {
                "keyword": "get",
                "score": 12
            },
            {
                "keyword": "ppc",
                "score": 11
            },
            {
                "keyword": "grader",
                "score": 10
            },
            {
                "keyword": "guide",
                "score": 9
            },
            {
                "keyword": "find",
                "score": 8
            },
            {
                "keyword": "keyword",
```

```
                    "score": 8
                }
            ],
            "keyword_density": {
                "ads": 4.75,
                "google": 3.9,
                "free": 2.55,
                "marketing": 2.55,
                "get": 2.04,
                "ppc": 1.87,
                "grader": 1.7,
                "guide": 1.53,
                "find": 1.36,
                "keyword": 1.36
            },
            "suggested_density": "1-2% per keyword for SEO.",
            "summary": "This free guide includes tools to: \n \n Lear
the basics of pay-per-click advertising \n Understand the Google
Ads auction process \n Strategically craft compelling ads that
drive clicks \n Identify keywords that attract potential
customers \n \n \n Get My Guide \n \n \n \n \n \n \n \n \n \n \n
\n \n \n \n \n \n \n \n \n \n \n \n Keyword Research Made Fas
and Easy \n THE FREE KEYWORD TOOL \n Keyword research can be a
slog, but our free tool makes it a cinch to find the keywords
your business needs to drive traffic through SEO and PPC.
Loading... \n \n \n \n \n \n \n   \n \n \n \n \n \n \n \n Free
Tools Google Ads Grader \n Facebook Ads Grader \n Free Keyword
Tool \n Website Grader \n Explore Topics Copywriting \n Facebook
Ads \n Industry News & Insights \n Instagram \n Lead Generation
\n Marketing Ideas \n Paid Search Marketing \n SEO \n Social
Media \n Websites & Online Presence \n Learn Blog \n Top Blog
Posts \n Guides \n PPC University \n Marketing 101 \n
Infographics \n Social Ads 101 \n Marketing Tips Google Ads
Industry Benchmarks \n Facebook Advertising Benchmarks \n What I
a Good Conversion Rate? Get your grade \n \n \n See More Free
Tools \n Resources Guides 135 Best Words & Phrases for Marketing
```

```
with Emotion\u00a0 \n PPC 101: Complete Guide to Google Ads \n 2
Ways to Increase Traffic to Your Website \n Recommended Reads
Google Ads Benchmarks for Your Industry \n Facebook Ads
Benchmarks for Every Industry \n 15 Insanely Effective Sales
Promotion Examples \n PPC 101 What is PPC?",
        "gist": "The page discusses topics centered around ads,
google, free, marketing, get.",
        "seo_suggestions": {
            "suggested_keywords": [
                "How to master ads",
                "Top ads tools for 2025",
                "Best ads strategies",
                "Guide to ads success",
                "ads optimization techniques",
                "How to master google",
                "Top google tools for 2025",
                "Best google strategies",
                "Guide to google success",
                "google optimization techniques",
                "How to master free",
                "Top free tools for 2025",
                "Best free strategies",
                "Guide to free success",
                "free optimization techniques",
                "How to master marketing",
                "Top marketing tools for 2025",
                "Best marketing strategies",
                "Guide to marketing success",
                "marketing optimization techniques",
                "How to master get",
                "Top get tools for 2025",
                "Best get strategies",
                "Guide to get success",
                "get optimization techniques"
            ],
            "guidelines": [
```

```
                "Include these keywords in the title tag, meta
description, and H1 headings.",
                "Aim for 1-2% keyword density per keyword across
the content.",
                "Use long-tail variations of these keywords for
better ranking."
            ]
        }
    }
```

9. Anchor Tag Suggestion

Analyzes anchor tags and suggests improvements.

Request

Method	URL
POST	api/analyze_hi_tag

Params	Values
content	string

Response

Status	Response
200	```"anchor_tags": { "total_anchors": 90, "missing_anchors": 9,```

```
            "suggestion": "Replace generic anchor texts with
keyword-rich phrases."
        },
```

10. URL Structure Optimization

Analyzes and suggests optimizations for the URL structure.

Request

Method	URL
POST	api/analyze_url_structure

Params	Values
url	string

Response

Status	Response
200	``` "url_structure": { "url": "https://www.wordstream.com/", "status": "URL is optimized." }, ```

11. Robots.txt File Validation

Validates the presence and content of the robots.txt file

Request

Method	URL
POST	api/validate_robots_txt

Params	Values
url	string

Response

Status	Response
200	```"robots_txt": {`` `` "status": "Exists",`` `` "content": "# START YOAST BLOCK\n#`` ``-------------------------\nUser-agent: *\nDisallow:\n\nSitemap:`` ``https://www.wordstream.com/sitemap_index.xml\n#`` ``-------------------------\n# END YOAST BLOCK"`` ``},```

12. XML Sitemap Validation

Validates the presence of an XML sitemap

Request

Method	URL
POST	api/validate_sitemap

Params	Values
url	string

Response

Status	Response

200	`"xml_sitemap": {`
	`    "status": "Exists",`
	`    "sitemap_url": "https://www.wordstream.com/sitemap.xml"`
	`},`

13. Blog Optimization

Analyzes competitor's blog content and titles and suggests optimizations

Request

Method	URL
POST	api/analyze_blog_optimization

Params	Values
content url	String String

Response

Status	Response
200	<div><pre> "blog_optimization": {
"current_title": "Social Media Marketing and Management
Tool	Hootsuite",
"h1_tags": [
"Save time and get REAL results on social
media.Hootsuite makes it easy."
],
"suggested_title": "Social Media Marketing And Management
Tool	Hootsuite - Social Media Just",
"competitor_titles": [],
"google_suggested_titles": [
"Just a moment...",
"8 time-saving social media automation tools",
"Crafting Social Media Strategy: Tip & Tricks with
Hootsuite"
],
"summary": "Add keyword-rich blog titles and ensure H1
tags match content."
},</pre></div>

14. Broken URL Detection

Detects Broken URLs on the page

Request

Method	URL
POST	api/detect_broken_urls

Params	Values
url	string

Response

Status	Response
| 200 | ```
"detect_broken_urls": {
  "broken_urls": [
      [
          "https://www.facebook.com/WordStream",
          400
      ],
      [
          "https://twitter.com/WordStream",
          403
      ],
      [
          "https://www.linkedin.com/companies/wordstream",
          999
      ]
  ],
``` |

Glossary

Conventions

- **Client** - Client application.
- **Status** - HTTP status code of response.
- All the possible responses are listed under 'Responses' for each method. Only one of them is issued per request server.
- All response are in JSON format.

Status Codes

All status codes are standard HTTP status codes. The below ones are used in this API.

2XX - Success of some kind
4XX - Error occurred in client's part
5XX - Error occurred in server's part

Status Code	Description
200	OK
201	Created

202	Accepted (Request accepted, and queued for execution)
400	Bad request
401	Authentication failure
403	Forbidden
404	Resource not found
405	Method Not Allowed
409	Conflict
412	Precondition Failed
413	Request Entity Too Large
500	Internal Server Error
501	Not Implemented
503	Service Unavailable