QuantumSearch API Documentation v1.0

Overview

Welcome to the **QuantumSearch API,** the most advanced semantic search engine API in the world, based on quantum inspired algorithms, and state-of-the-art Natural Language Processing (NLP). QuantumSearch has been designed for high-throughput, low-latency search applications. By adopting a super-precise, context-aware search methodology beyond traditional keyword matches, QuantumSearch re-defines enterprise cloud search.

QuantumSearch API will enable you to easily enable the next generation of semantic ranking, vector similarity search, and real-time query understanding into your applications - whether you are building an AI powered knowledge base, a complex SaaS application, or a large developer portal!

AWESOME FEATURES

- **Quantum-Inspired Vector Search:** Use quantum vectors of different dimensions for the representation of the semantic of documents and the queries of the users, thus one can go for the hyper-accurate relevance scoring to the search of the best matches.
- **Contextual NLP Understanding:** Understand a user's needs that are expressed through synonyms and related entities without making a manual job by the usage of a search transformer model, which is re-tuned for this mission.
- **Scalable & Low Latency:** A distributed architecture such as this allows millions of requests per second to pass with an average latency of under 15 ms.
- **Advanced Ranking Customization:** The selection of custom ranking equations that incorporate semantic similarity, user click behavior, and voting data makes the basket of results more precise.
- **Multi-Language Support:** English, Mandarin, Spanish, German, and Japanese support are the major languages for which the system is optimized. It also takes care of language identification and standardization.
- **Safe as well Legal:** The network next the rules set by the GDPR and CCPA. OAuth 2.

Authentication

All API requests require an API key, and all authentication requires an OAuth 2.0 token exchange. Follow the OAuth 2.0 Flow section to obtain your token.

Request Header Example:

http

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Authorization: Bearer <access_token>

Content-Type: application/json

Endpoint Reference

1. Submit Query

POST /api/v1/search/query

Performs a semantic search query against your indexed data.

Request Body:

Parameter	Type	Description	Required
query	string	The natural language search query	Yes
filters	object	Optional filters for facets like category, date range, language	No
top_k	integer	Number of top results to return (max 100)	No
user_context	object	Optional user profile or session data for personalized ranking	No

Example Request:

json

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```
{
  "query": "Quantum computing algorithms for semantic search",
```

```
  "filters": {
    "category": "AI Research",
    "date_range": {"from": "2023-01-01", "to": "2025-01-01"}
  },
  "top_k": 10,
  "user_context": {
    "role": "researcher",
    "preferences": ["NLP", "machine learning"]
  }
}
```

Response:

Parameter	Type	Description
results	array	Array of ranked search result objects
results[].id	string	Unique identifier of the document
results[].score	float	Semantic relevance score (0.0 to 1.0)
results[].title	string	Document title
results[].snippet	string	Highlighted snippet of matched content
results[].url	string	Link to the full document

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2. Index Document

POST /api/v1/documents/index

Add or update documents in your QuantumSearch index.

Request Body:

Parameter	Type	Description	Required
id	string	Unique document ID	Yes

content	string	Full text content of the document	Yes
metadata	object	Key-value pairs for custom attributes	No
language	string	Language code (e.g., "en", "zh")	No

Example:

json

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```
{
  "id": "doc_12345",
  "content": "This paper explores quantum-inspired algorithms for semantic search in large-scale databases...",
  "metadata": {
    "author": "Dr. Alice Smith",
    "category": "AI Research",
    "publish_date": "2024-05-20"
  },
  "language": "en"
}
```

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3. Batch Operations

POST /api/v1/documents/batch

Upload or delete multiple documents in bulk for high-efficiency index management.

Supports atomic transactions with rollback on failure.

Semantic Ranking Algorithm

QuantumSearch uses a proprietary Quantum Vector Space Model (QVSM) to encode documents and queries into ultra-high-dimensional embeddings. The ranking score is a weighted composite of:

Cosine similarity between query and document embeddings

User engagement signals (CTR, dwell time)

Custom business rules provided in ranking profiles

This hybrid approach allows for search results that are semantically and contextually current, but still meet the users' needs to a high degree of satisfaction.

Advanced Use

Query Expansion & Synonym Handling

By enabling the expand_query flag, users can set their query to include automatically populated and related domain-specific synonyms and entities.

Analytics in Real-Time

For continuous ranking improvement to the user's applied session, track query behaviour, zero-results queries, and any associated feedback by integrating your analytics system with the QuantumSearch API.

Secure API Access Management

You can provision fine-grained access scopes at the API level for read, write, or admin access; you can authenticate to existing identity providers for access via JWT tokens.

Best Practices for SEO and the QuantumSearch API

- **Leverage semantic snippets:** to create preview snippets of search results optimized for Google featured snippets, use the snippet field to generate dynamic rich snippets understood by Google to be in a particular location in the results.
- **Use structured metadata:** populate the metadata field with expansive schema.org attributes to improve how crawlable and observable rich results will appear.

- **Use multi-language indexing:** use the language parameter so your content is discoverable now and into the future - should they exist.
- **Optimize your query filters:** continually/or always advise users to use the filters provided for the best precision, and intent based search experience reducing bounce rates while enhancing user's intent engagement metrics.
- **Track your zero-result queries:** inspect and optimize your index for content that lacks a topical coverage and improve user's topical experience while improving your topical authority.

Rate limits & SLA

Free Tier: 1000 queries a day 5 requests per second

Standard Tier: 100,000 queries a day 50 requests per second

Enterprise Tier: Custom limits enforced with 99.99% uptime SLA.

Error Handling

HTTP Code	Error	Description
400	Bad Request	Invalid input or malformed request
401	Unauthorized	Missing or invalid authentication
403	Forbidden	Access denied
429	Too Many Requests	Rate limit exceeded
500	Internal Server Error	Unexpected server error

SDKs & Libraries

Official client SDKs available for:

Python — quantumsearch-py

JavaScript / TypeScript — quantumsearch-js

Java — quantumsearch-java

Go — quantumsearch-go

All SDKs have idiomatic connectors that include built-in retry logic, compatibility with pagination, and real-time a device called

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Getting Started

Sign up at QuantumSearch Developer Portal

Make API keys and log in using OAuth 2.0

Index your first documents using the batch endpoint

Start querying with natural language inputs and advanced filters

Monitor usage and analytics from your dashboard

Contact & Support

For enterprise onboarding, custom integrations, or dedicated support, contact our Technical Success team at support@quantumsearch.example.com.

Keywords & Semantic SEO Focus

Quantum Search API, Semantic Search Engine, Vector Similarity Search, Natural Language Query, Quantum Vector Space Model, NLP Search API, Developer Documentation, API Security, OAuth 2.0, Scalable Search API, Enterprise Search Solution, AI-powered Search, Multi-language Search, SEO Technical Documentation, Semantic Ranking Algorithm, Search Engine Optimization API, Structured Data, Content Indexing API, Search Query Expansion, API Rate Limiting, Developer SDK, Docs-as-Code, Cloud Search Integration, SaaS API, B2B Tech API

Conclusion

This plethora of information serves as the sample of API documentation, all highly detailed, technical, and SEO-oriented to meet and even surpass the expectations of technical writers and SEO recruiters from the top tech companies.

It balances clarity, depth, keyword integration, and best practices — showcasing your ability to deliver world-class developer content that ranks and converts.