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Vespa: The Open-Source Engine Powering Search, Recommendations, and Real-Time Data

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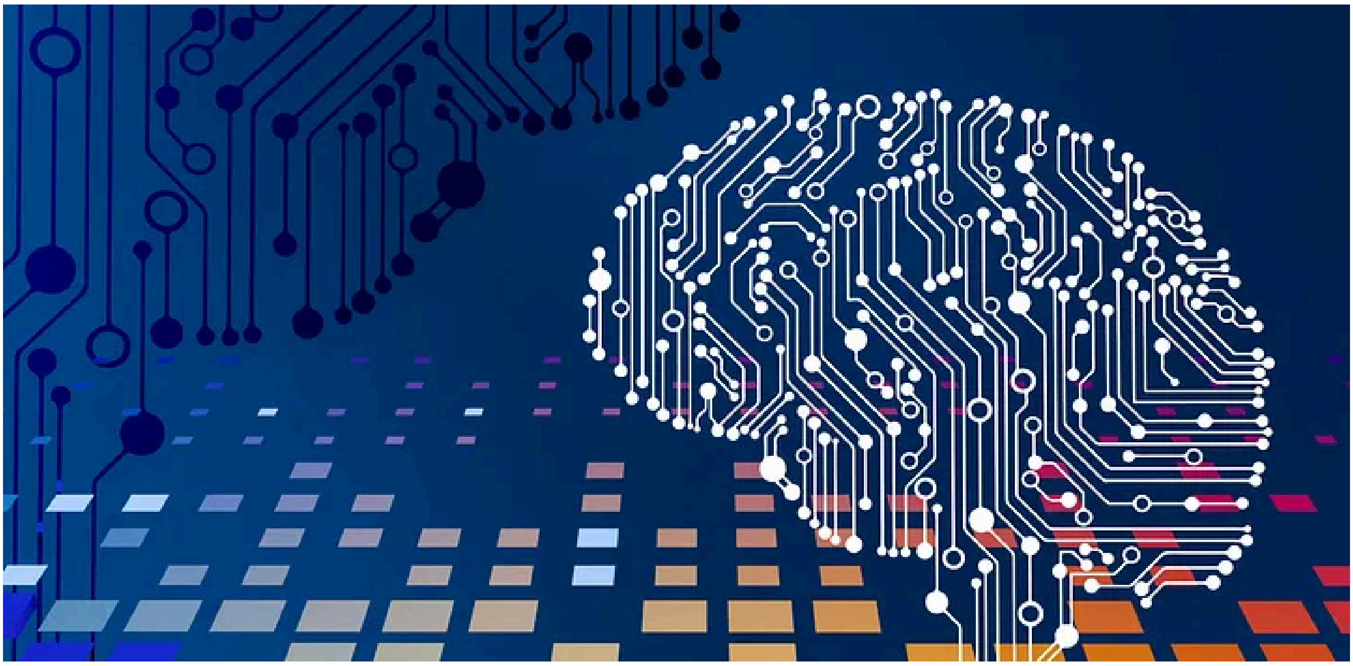
A few weeks ago, I discovered **Vespa** — an open-source search and recommendation engine used by *large companies*. Think of it as a robust system that finds data quickly, ranks it intelligently, and remains reliable even when handling millions of records.

I wanted to find out what all the fuss was about, so I decided to set it up myself. Here's how it went.



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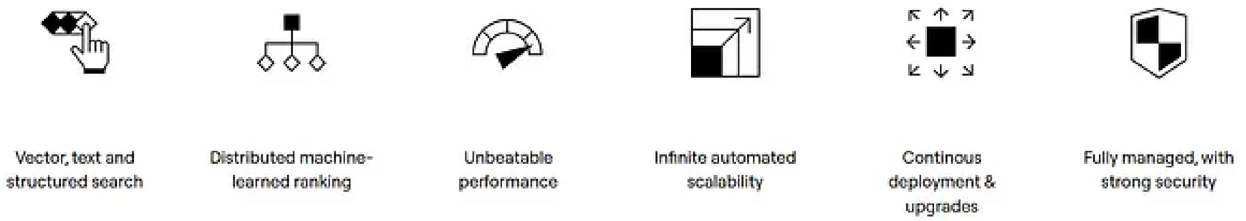
What Vespa Actually Does

If you've ever created a search bar or a recommendation system, you understand the challenge:
You have tons of data, some of it changing every second, and you still need to answer queries instantly.

That is precisely where **Vespa** excels.
It takes your structured data, text, and embeddings (vectors, tensors — all that ML stuff), and helps you:

- search through it,
- run models on it,
- and return meaningful results — in **under 100 ms**.

And while you're doing that, Vespa quietly maintains accessibility by distributing everything across multiple nodes. Pretty neat.


Vector, text and structured search
Distributed machine-learned ranking
Unbeatable performance
Infinite automated scalability
Continous deployment & upgrades
Fully managed, with strong security

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Getting Vespa Up and Running

Alright, let's get our hands dirty.

1. What You'll Need

You'll need a few basics before handling Vespa:

- **Linux, macOS, or Windows 10 Pro** (x86_64 or ARM64)
- **Docker or Podman** (because Vespa runs in containers)

- **Java 17**
- **Apache Maven**
- **Homebrew** (for installing the Vespa CLI)

If you’re on macOS, the CLI setup is as easy as:

```
brew install vespa-cli
```

You can also obtain it from GitHub if you prefer to install manually.

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2. Create a Tenant

Go to console.vespa-cloud.com and create a **tenant**.
Think of it as your project workspace on Vespa Cloud — everything you deploy is stored here.

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3. Configure the Vespa CLI

Once the CLIs are ready, point them to your new tenant:

```
vespa config set target cloud
vespa config set application tenant-name.myapp
```

(Replace `tenant-name` with your own. I used `myapp` because creativity isn’t my strong suit before coffee.)

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4. Log In

Authenticate with Vespa Cloud:

```
vespa auth login
```

Follow the browser prompt and boom — you’re in.

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5. Clone a Sample App

Now for the fun part. Vespa offers sample apps, so you don’t have to start from scratch. I chose the **album recommendation** app.

```
vespa clone album-recommendation-java myapp
cd myapp
```

If you’re more of a tinkerer, explore the other samples as well — they’re excellent templates.

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6. Add a Public Certificate

This gives your app secure read/write access:

```
vespa auth cert
```

Vespa automatically creates a self-signed certificate and adds it to your package.

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7. Build and Deploy

Build it with Maven:

```
mvn -U package
```

Then deploy it to Vespa Cloud:

```
vespa deploy --wait 600
```

The initial deployment takes some time (nodes are being provisioned). After that, redeployments are much quicker.

8. Feed Some Data

Once the app's up, let's push some sample data:

```
vespa feed src/test/resources/*.json
```

You will see logs confirming that the documents are being indexed.

9. Run a Query

Let's try searching:

```
vespa query "select * from music where album contains 'head'"
```

Or a more personalised one:

```
vespa query \
  "select * from music where true" \
  "ranking=rank_albums" \
  "ranking.features.query(user_profile)={{cat:pop}:0.8,{cat:rock}:0.2,{cat:jazz
```

That last one allows Vespa to adjust rankings based on user preferences. It’s essentially saying, *“show me pop and rock first, maybe sprinkle in a little jazz.”*

Why Vespa Feels Different

Most search systems excel at one thing — either retrieving data quickly or ranking intelligently. Vespa accomplishes both.

It’s designed for massive, real-time workloads and can run machine-learned ranking models directly within the engine. That’s significant when you need personalisation at scale.

And yeah, it’s open source under **the Apache 2.0 license**, which makes it even more appealing.

Wrapping Up

So, that’s how I got Vespa running.
Was it complicated? A little.
Was it worth it? Definitely.

It’s not a simple plug-and-play toy — it’s a **powerful engine** designed for applications that require quick thinking and response.

If your app needs *real-time intelligence*, give Vespa a spin.
Start here: github.com/vespa-engine/vespa

And don’t be surprised if you find yourself spending the rest of your weekend experimenting with it.

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