

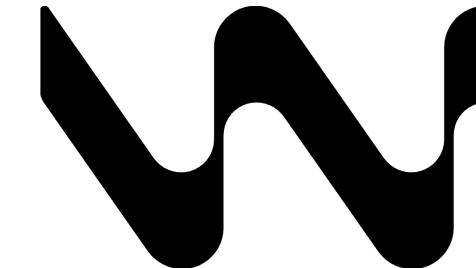
Building WebOpt environment

How LLM can optimize web app?

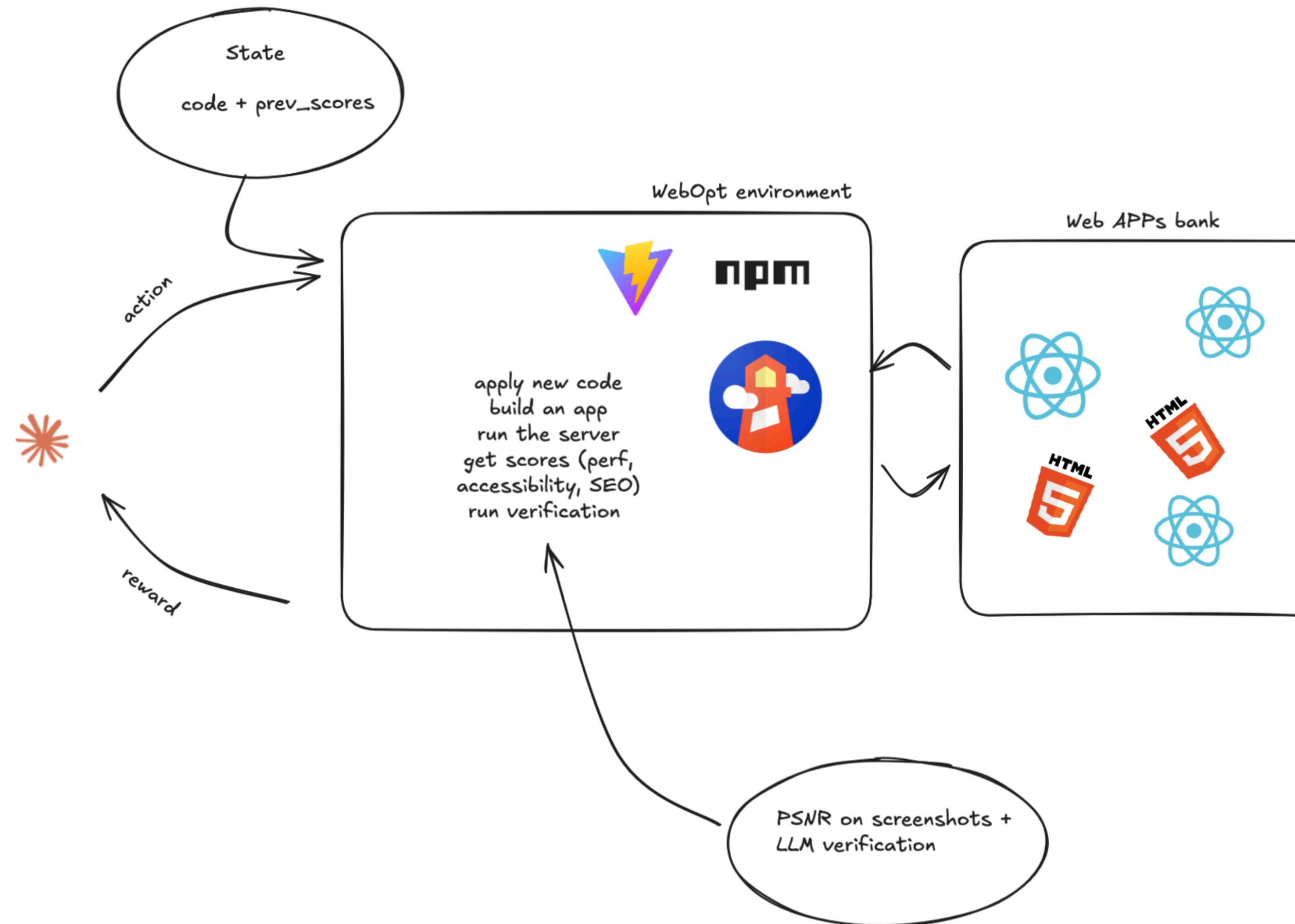
- Just by editing the code?
- ...But it's not enough

We've built the better environment
for optimizing the web :)

WebOpt env

- Based on openEnv standard
- Checks state of the art metrics for the web app
- Scores the whole pipeline, not just a code
- 30% vibecoded with 😎 

How it works?



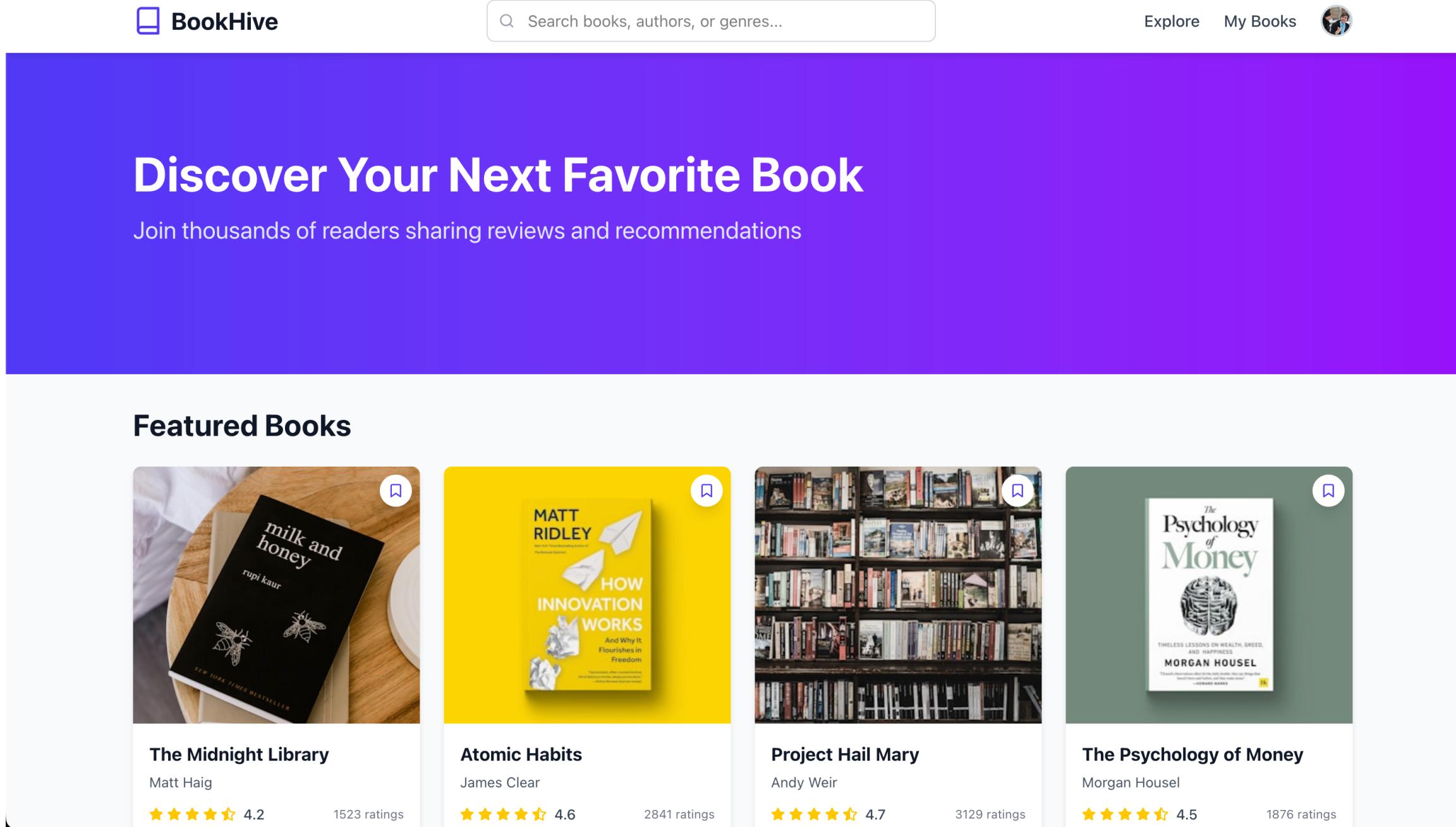
Projects bank

- The environment contains a bank of web application
- You can add new applications to the bank to make your agents scale

Rewards

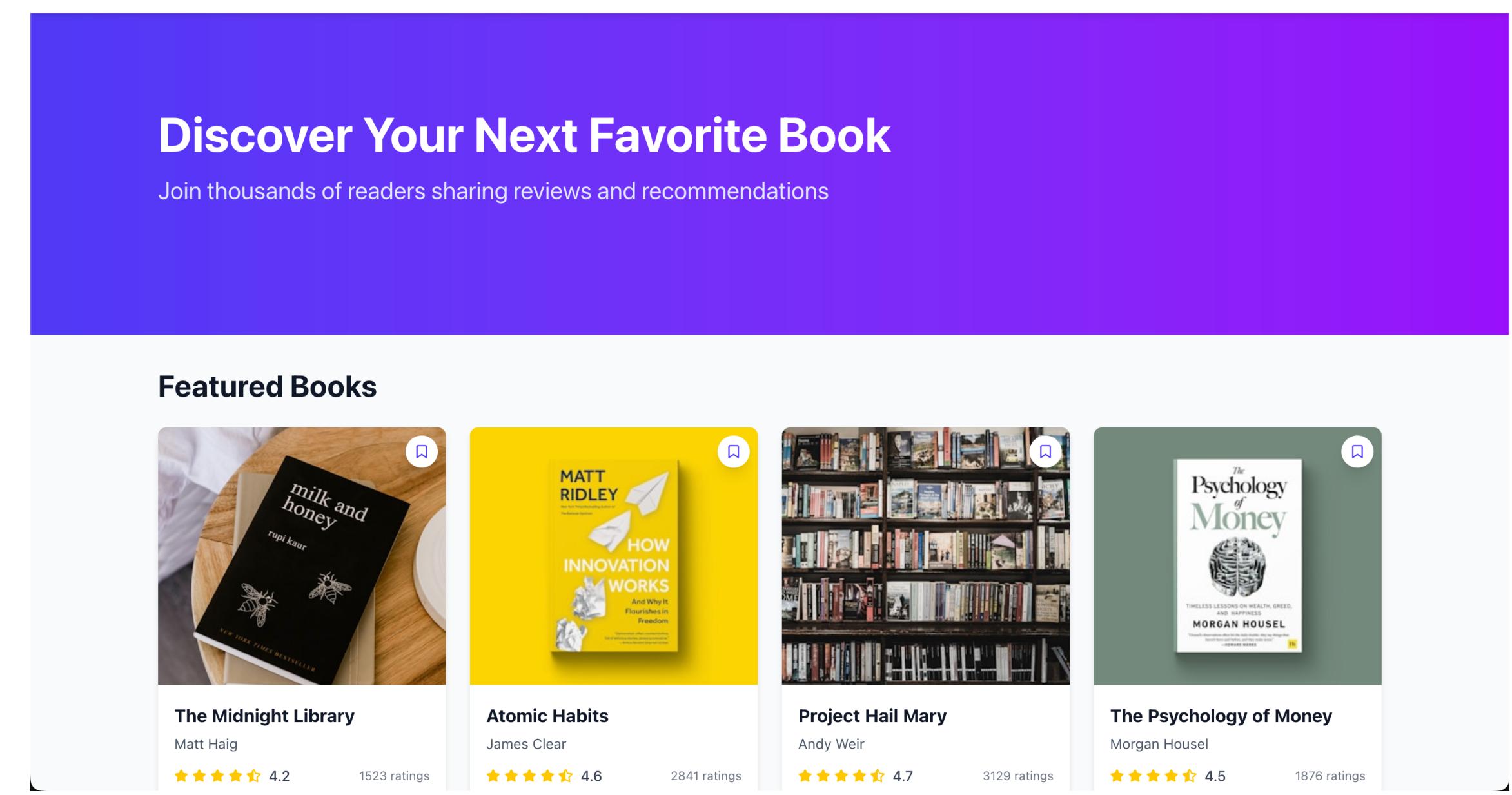
- Average lighthouse metrics for perf, seo and accessibility
- Visual similarity evaluation (verification)
- Functional evaluation with Claude: (verification)
 - Create a specification of the original web app based on the screenshot
 - Score the new version of the app against the specification

Functional reward scoring



Functional spec - LLM-extracted from screenshot

1. Primary Navigation Menu - criteria:
2. Search Functionality - criteria:
 - Search bar is prominently displayed in the header area
 - Search capability for "books, authors, genres"



Functional score: **14/15**

1. The navigation menu shows 'Explore' and 'My Books', both clearly visible and accessible.
2. **No search bar is visible in the header area.**

Why it's usefull?

- Works e2e. Modifications of the build configs will be scored as well
- Mixed reward function allows to adjust the reward based on web app structure, optimize for SEO or performance

Claude agent

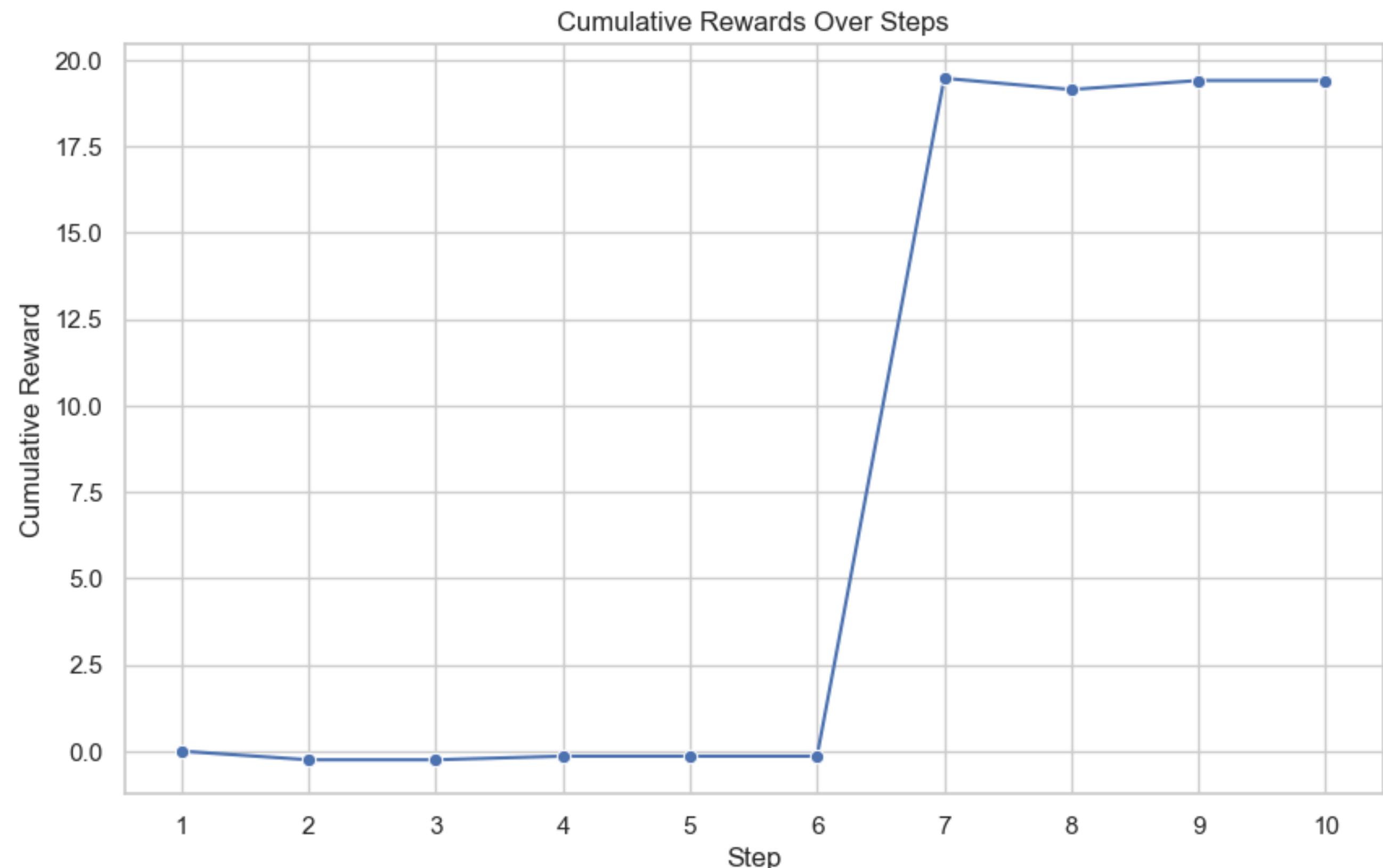
```
Initial Reward: 0
Modifying file: /tmp/current_project/src/pages/Home.jsx
Reward: 0.6112568039520013
Step 1 completed.
=====

Modifying file: /tmp/current_project/src/pages/Home.css
Reward: 0.0
Step 2 completed.
=====

Modifying file: /tmp/current_project/src/pages/Home.jsx
Reward: -0.6276425293325595
Step 3 completed.
=====

Modifying file: /tmp/current_project/src/pages/Home.css
Reward: 0.0
Step 4 completed.
=====

Modifying file: /tmp/current_project/src/main.jsx
Reward: 0.2902594403503856
Step 5 completed.
=====
```



Check this out

<https://github.com/alex-kharlamov/WebOptEnv>

A tiny demo

