WebDevAI

All best AI tools using for web development

VAN AN NGUYEN - A00024359

Summary

1. Overview

Projec name: **WebDevAI tools**

Student name: **Van An Nguyen**

Student id: **A00024359**

Wireframe:
https://www.figma.com/design/Vay785WOS6CNvpkh5tiaPs/Web-Design-2?node-id=0-1&p=f&t=aNIGtEKgr00ytHxj-0

GitHub repository:
https://github.com/nguyenvanan2730/WebDevAI

Live website: **https://main.d1jjvzlcbpom02.amplifyapp.com/**

2. Website Pitch

Purpose: This platform collects the latest AI tools to boost productivity at every stage of web development

Target: This project is suitable for anyone working on the web development process.

- Marketer
- Designer
- Product Manager
- Tester
- DevOps
- Developer
- Analyst

2. Website Pitch

Accessibility Considerations

- **Responsive design:** that adapts to various screen sizes (desktop, tablet, mobile)
- **Clear visual hierarchy:** with proper contrast and readable typography
- **Semantic HTML structure:** for screen reader compatibility
- **Interactive elements** (like the review form) with proper validation and error messaging
- **Keyboard navigation:** support throughout the interface

2. Website Pitch

Ethics Considerations

- **Transparency:** AI tools are grouped into free, freemium, and paid, so users can choose easily.
- **Diversity of Perspective:** Community reviews share different opinions about how each tool works.
- **Content Moderation:** Reviews from users are checked through a form to keep them clear and reliable.
- **Privacy:** Users can enter a custom name and use random avatars to stay anonymous.
- **Inclusivity:** Random avatars help show visual diversity for all users.
- **User Experience:** Clear error messages help users understand what to do without feeling frustrated.

3. UX Research

Persona

Persona 1: Mark

Persona 2: Emma Davis

MARK

- 25 years old
- London
- Junior Backend Developer
- Experience: 2 years

ABOUT THE USER

Mark is a curious and motivated developer who likes trying out new coding tools and frameworks. In his free time, he visits websites like GitHub, Dev.to, and tech blogs to learn more. Besides coding, he enjoys video editing, traveling, and playing strategy games.

NEEDS AND EXPECTATIONS

- Discover reliable AI tools to help with debugging, code completion, and UI design
- Easily find tools relevant to backend development
- Access other reviewer without creating an account

GOALS

- Increase coding speed and reduce time spent on repetitive tasks
- Improve the quality of his code through AI suggestions
- Contribute useful tools to the community

BEHAVIORS

- Uses the search bar and category filter often
- Reads reviews before trying a tool
- Occasionally submits tools he finds helpful
- Visits the site weekly to stay updated on new tools

PAIN POINTS

- Wastes time searching for tools that turn out to be low quality or poorly maintained
- Struggles to find the right tool that can generate code for backend development needs.
- Don’t know which tools are popular or trending among other users.

EMMA DAVIS

- 29 years old
- Manchester
- UI/UX Designer
- Experience: 5 years

ABOUT THE USER

Emma is always looking for ways to improve her design process. She explores new tools regularly and keeps up with trends through design platforms and newsletters. She also enjoys creative hobbies like photography and interior decorating.

NEEDS AND EXPECTATIONS

- Discover AI tools that support UI design, wireframing, and prototyping
- Quickly understand how a tool fits into the design process
- Browse tools with visual examples or previews before trying them

GOALS

- Speed up her design workflow with AI assistance
- Create more engaging and accessible designs
- Stay ahead of design trends by using the latest tools

BEHAVIORS

- Browses tools by design phase or role: Designer
- Often looks for tools with high ratings and visual feedback
- Shares tool discoveries with her design team
- Returns regularly to check for new or trending tools

PAIN POINTS

- Finds it hard to know which tools is currently trending and popular using in the communities
- Often unsure if a tool is free or paid, and dislikes unclear pricing or hidden costs
- Wants to share her experience on some design ai tools but can’t find a simple way to do so

3. UX Research

User Journey

User Journey Map 1 – Mark (Junior Backend Developer)

User Journey Map 2 – Emma (UI/UX Designer)

User Journey Map – Mark (Junior Backend Developer)

	Awareness	Consideration	Acquisition	Service	Loyalty
User steps	Looking for AI tools for backend coding	Comparing tools that support debugging/code writing	Deciding which tool to try	Using and reviewing the tool	Returning to discover new tools
User actions	Searches on Google, GitHub, Dev.to	Uses filters by phase or role on homepage	Opens tool detail page to read reviews	Tries the tool, checks examples, leaves feedback	Adds tool to faverites, submits new tools
Goals & Experiences	Find useful tools to save time and improve code	Understand which tools fit backend development	Choose a tool that boosts productivity	Improve workflow using automation and AI suggestions	Stay updated, contribute to the developer community
Feelings and thoughts	Unsure where to start	Overwhelmed by too many similar tools	Excited to try a promising tool	Satisfied if the tool meets his needs	Feels confident and loyal to the platform
Pain points	Spends too much time searching	Difficult to choose tools relevant for backend use	Some tools require sign-up to see full details	Doesn’t know which tools are popular among users	Can’t save tools or follow tool updates easily
Opportunities	Create content or tags by role	Clear phase-based categorization	Allow public access to reviews without sign-up	Add “Trending” or “Recommended” tools section	Let users favorite or bookmark tools

User Journey Map – Emma (UI/UX Designer)

	Awareness	Consideration	Acquisition	Service	Loyalty
User steps	Looking for AI tools to support UI/UX design	Browsing tools for prototyping, wireframing, etc.	Choosing the right tool to speed up design workflow	Using the tool and checking if it fits her needs	Returning to find new tools and share experiences
User actions	Browses Behance, design blogs, and newsletters	Explores platform filters by role: Designer	Views tool details, checks video or previews	Uses tool, shares thoughts with her design team	Submits reviews, recommends tools to others
Goals & Experiences	Discover tools to improve design efficiency	Understand how tools support design-specific tasks	Choose tools with visual examples and clear pricing	Improve design quality and save time with AI assistance	Stay inspired and help the design community grow
Feelings and thoughts	Doesn’t know which tool fits design needs	Confused by tools that look similar or lack visuals	Curious about tools with good UI and feedback	Happy if the tool supports her workflow	Motivated to share and revisit the platform
Pain points	Hard to find designer-focused tools	Tools often lack previews or clear explanations	Unclear pricing or hidden costs, sign-up required	No way to filter by design-specific web features	Wants to share tool experiences but lacks a platform
Opportunities	Curated list for designers	Add screenshots, tool demos, visual examples	Add “Free/Paid” badges and remove forced sign-ups	Design-friendly filters for designer in web development	Enable user reviews, likes, and comments

3. UX Research

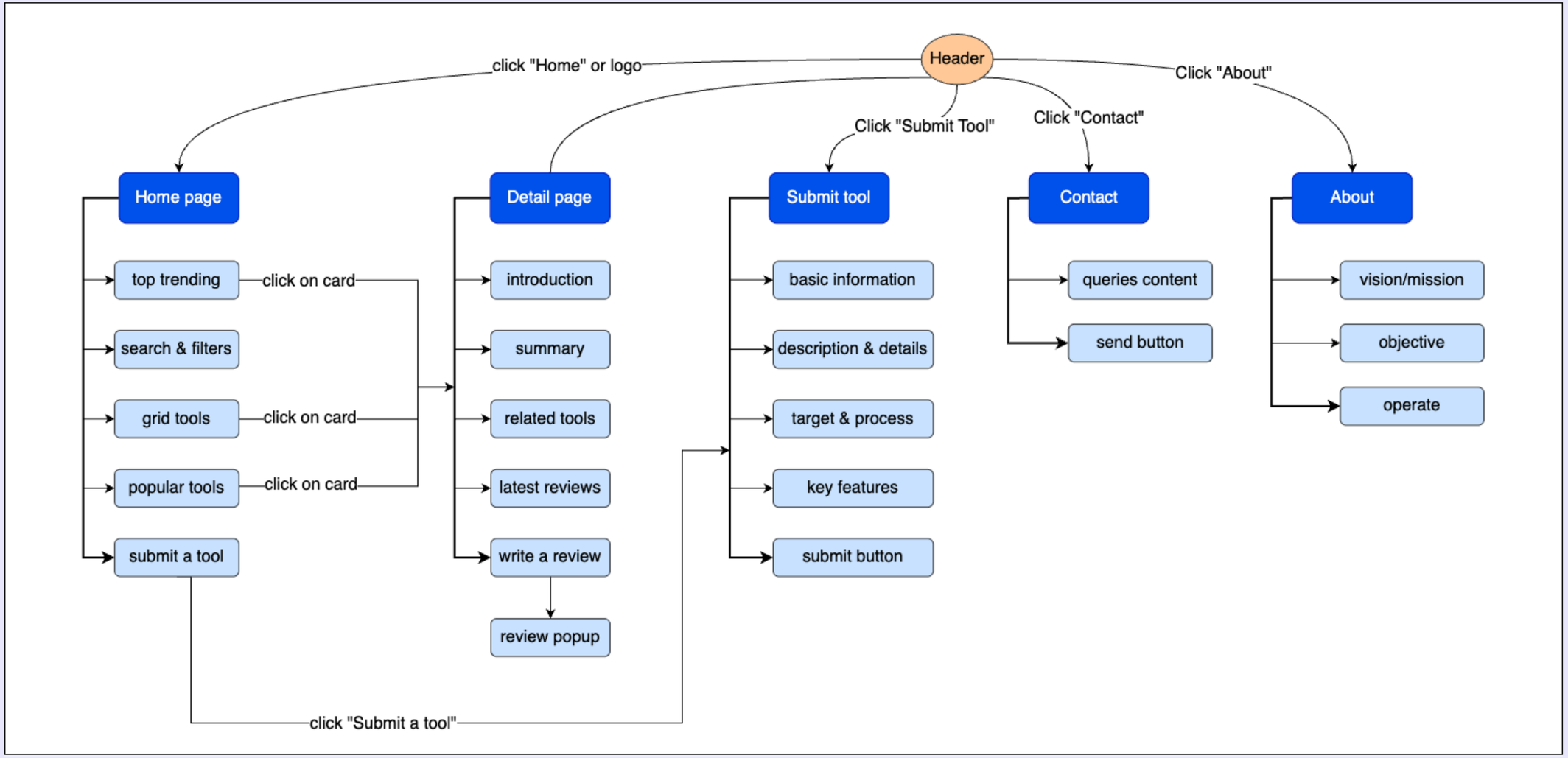
wireframe

Wireframe link

https://www.figma.com/design/Vay785WOS6CNvpkh5tiaPs/Web-Design-2?node-id=0-1&p=f&t=aNIGtEKgr0OytHxj-0

3. UX Research

Sitemap



4. Technical stack

Frontend Framework

React.js: The core JavaScript library for component-based architecture

React Router: Navigation and routing between different pages

Context API: Used for state management

UI Components & Styling

CSS3: Custom CSS with responsive design (homepage, detail page)

Material UI: Contact, About and Submit tool page

React Icons: SVG icon such as FaStar, FaTimes

CSS Variables: color schemes and design consistency

CSS Flexbox and Grid: For responsive layouts

APIs & External Services

Dicebear API: get random avatar

YouTube iframe API: displaying tool tutorial videos

Json data: Provides all necessary data for the website (e.g. toolData.json)

5. Component Architecture

By dividing the site into smaller, reusable pieces—like Header for navigation, Footer for contact links, and ToolCard + ToolGrid for tool listings—the code stays clean, easy to maintain, and simple to extend. Each component has just one job, so can be quickly updated or reused in different parts of the site without causing issues elsewhere.

Header: Displays the logo and navigation links, appears on every page, and takes no special data—just consistent branding

Footer: Shows contact information, copyright text, or social media links, also appears on every page

ToolCard: Displays basic details of one AI tool (name, short description, image/logo)

ToolGrid: Arranges multiple ToolCard components in a grid layout, useful for listing tools on pages like search results or popular sections

6. Data Handling & API Usage

Local JSON Data:
Currently, all the AI tools listed on the website are stored in a ***toolsData.json*** file. When the website loads, this data is read, then passed it into React components like TooGrid and ToolCard. When the user applies a search or filter, it will call to another function to process the original data and return matching result

External APIs:

- **Dicebear API**: This API is used on the “Write a Review” screen to generate random avatars. By default, when a user writes a review, they are automatically assigned a random avatar. If they prefer a different one, they can click the “New” button to generate a new avatar instantly.
- **YouTube IFrame API:** This API is used in the detail page, by dynamically creates an embedded Youtube video in the the website, without hardcodeing the vedio URL.

Submit data: The Contact and Submit Tool pages allow users to fill out a form and submit their information. In the final step, the data is intended to be sent (via a POST request) to another API for processing or storage. However, this functionality has not been implemented yet.

7. Performance Optimization

Speed Optimization:

- **Code Splitting:** The source code is well-structured and separated into smaller bundles to improve loading time.
- **Lazy loading:** tool like react-icons are lightweight and support lazy loading.
- **Responsive Design:** Material UI, which is optimized for performance and responsive layouts
- **Image Optimization:** using image with appropriately sized to reduce bandwidth usage

Security Measures:

- **HTTPS Protocol:** All pages use HTTPS to keep user data safe and secure.
- **Input Validation:** Clean and check all user inputs to prevent security issues like XSS or injection attacks.
- **Security Headers:** Apply important HTTP headers such as Content-Security-Policy, X-Content-Type-Options, Strict-Transport-Security when fetch data

SEO Techniques:

This project includes essential **meta tags** like **description**, **viewport**, and **theme-color** for basic SEO setup. Using **semantic HTML** through Material UI components, and a **manifest file** is included to support PWA features. To improve SEO performance, **page titles**, and **meaningful alt text** for images are seted up.

8. Accessibility & Compliance

Accessibility (WCAG):

The platform is designed following the Web Content Accessibility Guidelines (WCAG) to ensure inclusivity and usability for all users, including those with disabilities

- **Semantic HTML** and **Material UI** components are used to improve screen reader support.
- All meaningful images and icons include **descriptive alt text**.
- The interface is fully **keyboard navigable**, allowing users to interact without a mouse.
- **Color contrast** has been carefully maintained for visual clarity.
- **Form fields** are labeled clearly and provide appropriate validation feedback.

GDPR Compliance:

The platform aligns with **General Data Protection Regulation (GDPR)** standards to protect user privacy:

- **No personal data is collected** unless users voluntarily provide it (e.g., submitting a tool or sending a message).
- **Clear messages and instructions** are displayed whenever user input is required.
- **Anonymous comments** may be allowed in the future. While no personal info will be collected, the system will ensure submitted content is handled responsibly and monitored for misuse.
- A **cookie consent banner** is planned for future integration of analytics tools, ensuring users can opt in or out.

Challenges & Learnings

Designing a Flexible Category System

Challenge: Each AI tool can belong to multiple development phases and user roles, making it complex to structure categories and filters.

Solution: Used a tag-based system and ensured the UI supports multi-category filtering for both phases and roles.

Limited Time for Backend/API Development

Challenge: Due to limited time, building a custom backend API was not feasible.

Solution: Created a local JSON file to simulate API responses, allowing the front-end to fetch and display tool data without needing a live backend.

Understanding GDPR Requirements

Challenge: Understanding what personal data is collected and ensuring compliance with GDPR.

Solution: Chose to design an anonymous comment system that avoids collecting personal data.

Thank you!