GOVERNMENT POLYTECHNIC KASHIPUR

A PROJECT REPORT

ON

PRACTICAL TRAINING

AT

STARTBIT IT SOLUTIONS PVT. LTD.

SUBJECT - NEXT.JS 14

DURATION : 01 JULY 2024 TO 31 JULY 2024

SUBMITTED TO

DEPARTMENT OF IT

SUBMITTED BY

PANKAJ RAWAT

INFORMATION TECHNOLOGY

2200912O019

Acknowledgement

I would like to express my sincere gratitude to **Startbit IT Solutions Pvt Ltd**, for providing me with the opportunity to undertake my summer training in **Next.js** framework. This experience has been immensely beneficial for my professional growth and has given me valuable insights into practical applications of web development.

I am deeply thankful to the entire team at Startbit IT Solutions Pvt Ltd for their constant support, guidance, and encouragement throughout my training period. Their expertise and willingness to share knowledge have greatly enhanced my understanding of the Next.js framework and its real-world applications.

I would also like to extend my heartfelt thanks to my institution, **Govt Polytechnic Kashipur**, for facilitating this training opportunity and supporting my educational endeavors.

I want to thank my **parents** for always supporting me, encouraging me, and believing in what I can do. Their motivation has been a key part of my success in school, college and my career.

I'm also very grateful to my **friends** who have always been there for me, helping and inspiring me whenever I needed it. Their support, both big and small, has played an important role in my growth, both personally and professionally. Their belief in me has made me more determined to try new things and do my best in everything I do.

This training has not only equipped me with technical skills but has also inspired me to pursue excellence in my future career.

Declaration

I, **Pankaj Rawat**, a student of **Govt Polytechnic Kashipur**, hereby declare that the summer training report on the **Next.js** framework completed at **Startbit IT Solutions Pvt Ltd** is an original work done by me. This report is a reflection of my own work and understanding during the training period from 01 July 2024 to 31 July 2024.

I also declare that this report has not been submitted to any other organization or institution for the award of any degree, diploma, or certificate. The work presented in this report is based on my practical experience and knowledge gained during the training at Startbit IT Solutions Pvt Ltd.

I confirm that the content of this report is authentic and has not been copied or reproduced from any other source without proper acknowledgment.

Date: 31 July 2024

Pankaj Rawat

Introduction of NEXT.js

Next.js is a popular open-source React framework for building full-stack web applications. It provides a set of tools and conventions that make it easier to build server-rendered or statically exported React applications.

Here's a breakdown of its key features:

1. **Server-Side Rendering (SSR)**

- Next.js allows you to render React components on the server side before sending them to the client. This can improve performance, especially for SEO, by allowing search engines to crawl the pre-rendered HTML.

2. **Static Site Generation (SSG)**

- You can pre-generate static HTML pages at build time, which can then be served to users instantly. This is useful for content that doesn't change frequently, like blogs or documentation.

3. **API Routes**

- Next.js allows you to create API endpoints directly within your application. This makes it easy to build full-stack applications by combining your front-end and back-end code in a single project.

4. **File-based Routing**

- Next.js uses a file-based routing system, meaning that the file structure of your project determines the routes of your application. For example, a file named pages/about.js will be accessible at the /about route.

Introduction of NEXT.JS

5. **Automatic Code Splitting**

- Next.js automatically splits your code into smaller bundles, which improves the load time of your application. Only the code needed for the current page is loaded, reducing the initial load time.

6. **Built-in CSS and Sass Support**

- You can import CSS and Sass files directly into your components, allowing for easy styling of your application without needing to set up additional configuration.

7. **Optimized Performance**

- Next.js includes several performance optimizations out of the box, such as image optimization, script loading, and more.

8. **TypeScript Support**

- Next.js has built-in support for TypeScript, making it easier to integrate type safety into your React projects.

10. **Rich Ecosystem**

- As an extension of React, Next.js benefits from the vast ecosystem of React libraries and tools. Additionally, Next.js has its own ecosystem of plugins and tools that further extend its functionality.

Overall, Next.js is a powerful framework that simplifies many common challenges in modern web development, making it a popular choice for developers building fast, scalable, and SEO-friendly applications.

Setting Up a Next.js Project

Step 1: Create a New Next.js Project

To start a new Next.js project, you can use the following command:

```
cd awkwardpy-nextjs-project
```

npx create-next-app@latest: This command uses npx to run the create-next-app package, which sets up a new Next.js project.

Step 2: Navigate to Your Project Directory

```
cd awkwardpy-nextjs-project
```

2. Setting Up TypeScript

```
npm install --save-dev typescript @types/react @types/node
```

Step 2: Initialize TypeScript Configuration

Next.js will automatically create a tsconfig.json file when you add a .ts or .tsx file to your project. To initialize it manually:

```
npx tsc --init
```

3. Setting Up Tailwind CSS

Tailwind CSS is a utility-first CSS framework that can be easily integrated into a Next.js project.

Step 1: Install Tailwind CSS and Its Dependencies

```
npm install tailwindcss postcss autoprefixer
```

Setting Up a Next.js Project

Step 2: Configure tailwind.config.js

Edit tailwind.config.js to include the paths to all of your template files:

```
module.exports = {
  content: [
    "./pages/**/*.{js,ts,jsx,tsx}",
    "./components/**/*.{js,ts,jsx,tsx}",
  ],
  theme: {
    extend: {},
  },
  plugins: [],
};
```

Step 3: Add Tailwind Directives to CSS

In your styles/globals.css (or create it if it doesn't exist), add the Tailwind directives:

```
@tailwind base;
@tailwind components;
@tailwind utilities;
```

4. Setting Up Framer Motion

Framer Motion is a popular animation library for React, and it can be easily used in Next.js.

Step 1: Install Framer Motion

```
npm install framer-motion
```

Setting Up a Next.js Project

Step 2: Use Framer Motion in Your Project

Here's a basic example of using Framer Motion in a component:

```
import { motion } from 'framer-motion';

export default function HomePage() {
  return (
    <motion.div
      initial={{ opacity: 0 }}
      animate={{ opacity: 1 }}
      transition={{ duration: 1 }}
    >
      <h1>Welcome to Awkwardpy Next.js Project</h1>
    </motion.div>
  );
```

- **motion.div:** This is a motion-enabled div element.
- **initial:** The initial state before the animation starts.
- **animate:** The state after the animation is complete.
- **transition:** Specifies how the animation should behave, such as its duration.

5. Running the Project

After setting everything up, you can start the development server:

```
npm run dev
```

npm run dev: This command starts the Next.js development server, which you can access at http://localhost:3000.

code Examples of NEXT.JS

```jsx
// pages/index.js
import React from 'react';

export default function HomePage() {
  return (
    <div>
      <h1>Welcome to Next.js!</h1>
    </div>
  );
}

// Output:
// Welcome to Next.js!
```

Basic Page Component

```jsx
// pages/_app.js
import React from 'react';

export default function MyApp({ Component, pageProps }) {
  return <Component {...pageProps} />;
}

// Output:
// Depends on the specific page being rendered
```

Custom App Component

```jsx
// pages/api/hello.js
export default function handler(req, res) {
  res.status(200).json({ message: 'Hello, API!' });
}

// Output (when hitting /api/hello endpoint):
// { "message": "Hello, API!" }
```

API Route

code Examples of NEXT.JS

```jsx
// pages/index.js
import React from 'react';

export async function getStaticProps() {
  return {
    props: {
      message: 'Hello, Pankaj!',
    },
  };
}

export default function HomePage({ message }) {
  return <div>{message}</div>;
}

// Output:
// Hello, Static Pankaj!
```

Static Generation (getStaticProps)

```jsx
// pages/index.js
import React from 'react';
import Link from 'next/link';

export default function HomePage() {
  return (
    <div>
      <Link href="/about">
        <a>Go to About Page</a>
      </Link>
    </div>
  );
}

// Output:
// A link that navigates to the /about page when clicked
```

Link Component

code Examples of NEXT.JS

CSS Modules

```
// styles/Home.module.css
.container {
  color: black;
}

// pages/index.js
import React from 'react';
import styles from '../styles/Home.module.css';

export default function HomePage() {
  return <div className={styles.container}>Hello awkwardpy</div>;
}

// Output:
// Hello awkwardpy
```

Using Head for Metadata

```
// pages/index.js
import React from 'react';
import Head from 'next/head';

export default function HomePage() {
  return (
    <div>
      <Head>
        <title>Home Page</title>
      </Head>
      <h1>Welcome to the awkwardpy Home Page!</h1>
    </div>
  );
}

// Output:
// Page title set to "Home Page"
```

code Examples of NEXT.JS

Image Component

```
// pages/index.js
import React from 'react';
import Image from 'next/image';

export default function HomePage() {
  return (
    <div>
      <Image
        src="/next.svg"
        alt="NextJs Logo"
        width={72}
        height={16}
        blurDataURL="/NextJs.svg"
      />
    </div>
  );
}

// Output:
```

API Route with Dynamic Parameter

```
// pages/api/user/[id].js
export default function handler(req, res) {
  const { id } = req.query;
  res.status(200).json({ user: `User ${id}` });
}

// Output (when hitting /api/user/123 endpoint):
// { "user": "User Pankaj" }
```

TypeScript Support

```
// tsconfig.json
{
  "compilerOptions": {
    "target": "es5",
    "lib": ["dom", "dom.iterable", "esnext"],
    "allowJs": true,
    "skipLibCheck": true,
    "strict": true,
    "forceConsistentCasingInFileNames": true,
    "noEmit": true,
    "esModuleInterop": true,
    "moduleResolution": "node",
    "resolveJsonModule": true,
    "isolatedModules": true,
    "jsx": "preserve"
  },
  "include": ["next-env.d.ts", "**/*.ts", "**/*.tsx"],
  "exclude": ["node_modules"]
}

// pages/index.tsx
import React from 'react';

const HomePage: React.FC = () => {
  return <div>Hello Pankaj from Typescript!</div>;
}

export default HomePage;

// Output:
// Hello Pankaj from Typescript!
```

Summer Training Project

Basic Portfolio Built with NEXT.JS

During my summer training at Startbit IT Solutions Pvt Ltd, I developed a basic portfolio website using Next.js 14. This project was a significant part of my training, allowing me to apply and enhance my skills in web development. However, I would like to acknowledge that the effort was not completely mine, and I currently have no advanced knowledge of Next.js.

Project Overview

My portfolio website is designed to showcase projects, skills, and experiences in an organized and visually appealing manner. The site is composed of several key sections, each serving a distinct purpose:

- Navbar: The navigation bar provides easy access to all sections of the website.
- Hero Section: The hero section is the first thing visitors see, featuring a video for attention and a introduction.
- Tech-Visuals: In this section, I display the coding languages and technologies. It features a collection of images representing technology.
- Workspace: Each container entry includes a brief description, the technologies used, and links to the project if available.
- Footer: The footer contains additional navigation links and contact information, ensuring that visitors can easily reach out to me for further inquiries or collaboration opportunities.

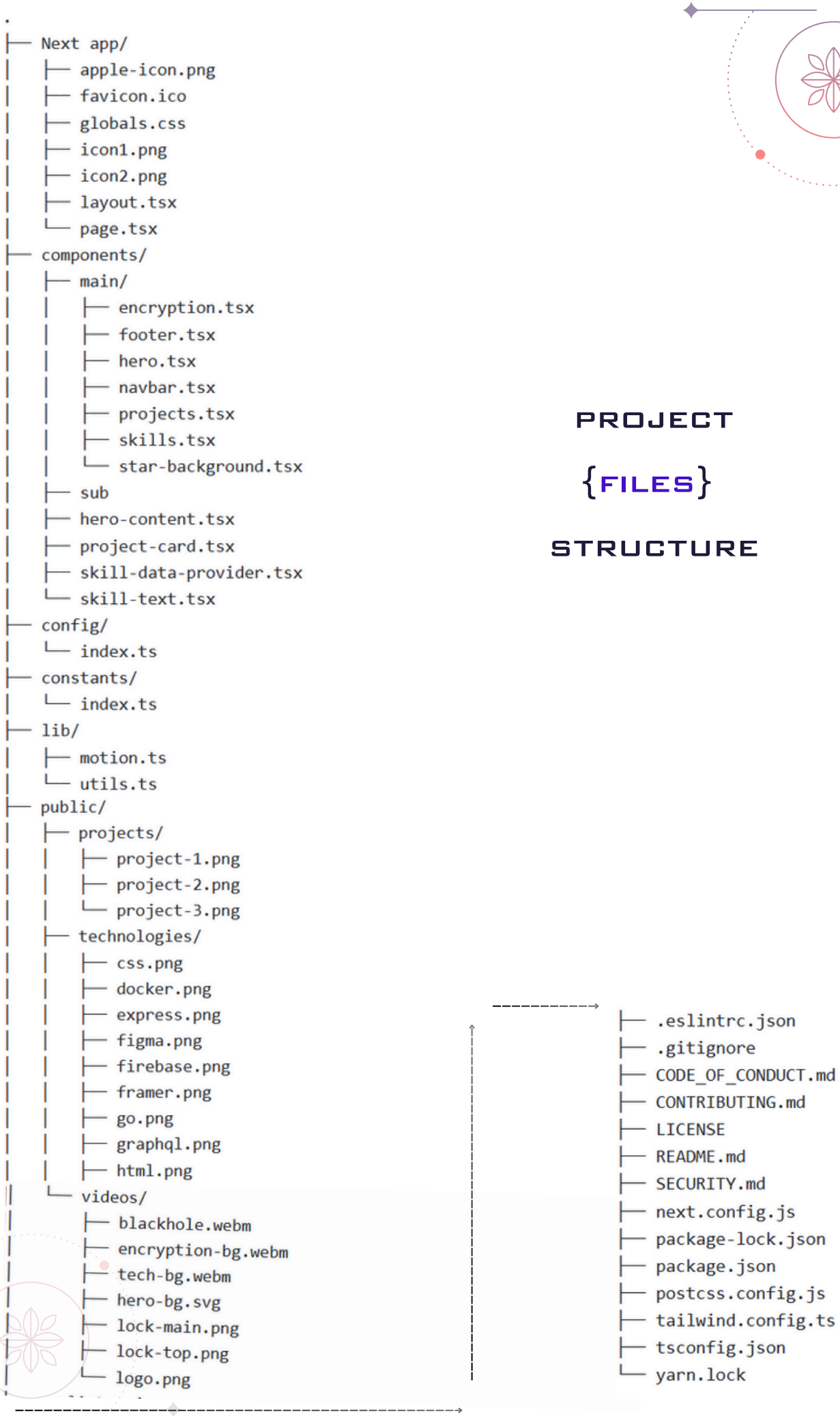
Technologies Used

- **Next.js 14**: The core framework used to build the portfolio.

Live Project Link URL

- bit.ly/pankaj-rawat-app

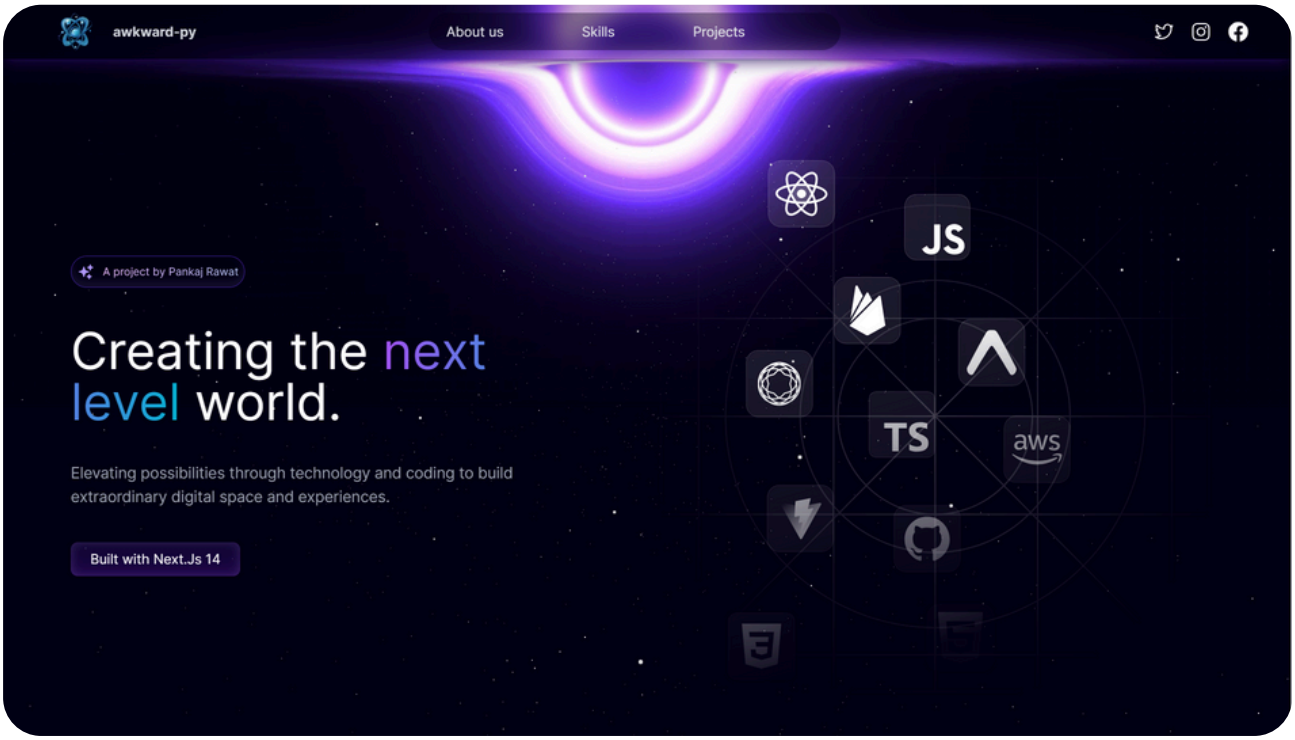
PROJECT {FILES} STRUCTURE



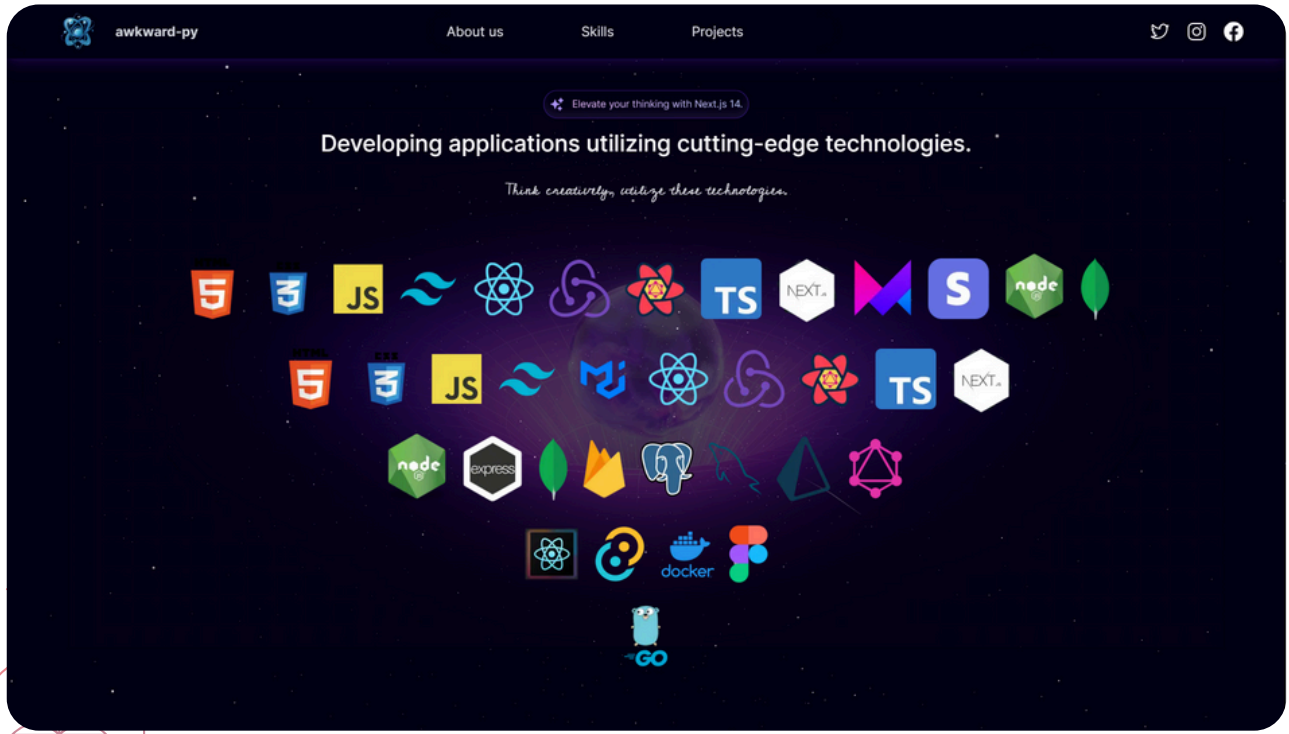
{Code} Segment

```tsx
"use client";

import { SparklesIcon } from "@heroicons/react/24/solid";
import { motion } from "framer-motion";
import Image from "next/image";

import {
  slideInFromLeft,
  slideInFromRight,
  slideInFromTop,
} from "@/lib/motion";

export const HeroContent = () => {
  return (
    <motion.div
      initial="hidden"
      animate="visible"
      className="flex flex-row items-center justify-center px-20 mt-40 w-full z-[20]"
    >
      <div className="h-full w-full flex flex-col gap-5 justify-center m-auto text-start">
        <motion.div
          variants={slideInFromTop}
          className="Welcome-box py-[8px] px-[7px] border border-[#7042f88b] opacity-[0.9]]"
        >
          <SparklesIcon className="text-[#b49bff] mr-[10px] h-5 w-5" />
          <h1 className="Welcome-text text-[13px]">
            A project by Pankaj Rawat
          </h1>
        </motion.div>

        <motion.div
          variants={slideInFromLeft(0.5)}
          className="flex flex-col gap-6 mt-6 text-6xl text-bold text-white max-w-[600px] w-auto h-auto"
        >
          <span>
            Creating the{" "}
            <span className="text-transparent bg-clip-text bg-gradient-to-r from-purple-500 to-cyan-500">
              next level
            </span>{" "}
            world.
          </span>
        </motion.div>

        <motion.p
          variants={slideInFromLeft(0.8)}
          className="text-lg text-gray-400 my-5 max-w-[600px]"
        >
          Elevating possibilities through technology and coding to build extraordinary digital space and experiences.
        </motion.p>

       <motion.a
          variants={slideInFromLeft(1)}
          className="py-2 button-primary text-center text-white cursor-pointer rounded-lg max-w-[200px]"
        >
         Built with Next.Js 14
        </motion.a>
      </div>

      <motion.div
        variants={slideInFromRight(0.8)}
        className="w-full h-full flex justify-center items-center"
      >
        <Image
          src="/hero-bg.svg"
          alt="work icons"
          height={650}
          width={650}
          draggable={false}
          className="select-none"
        />
      </motion.div>
    </motion.div>
  );
};
```

Visual Preview

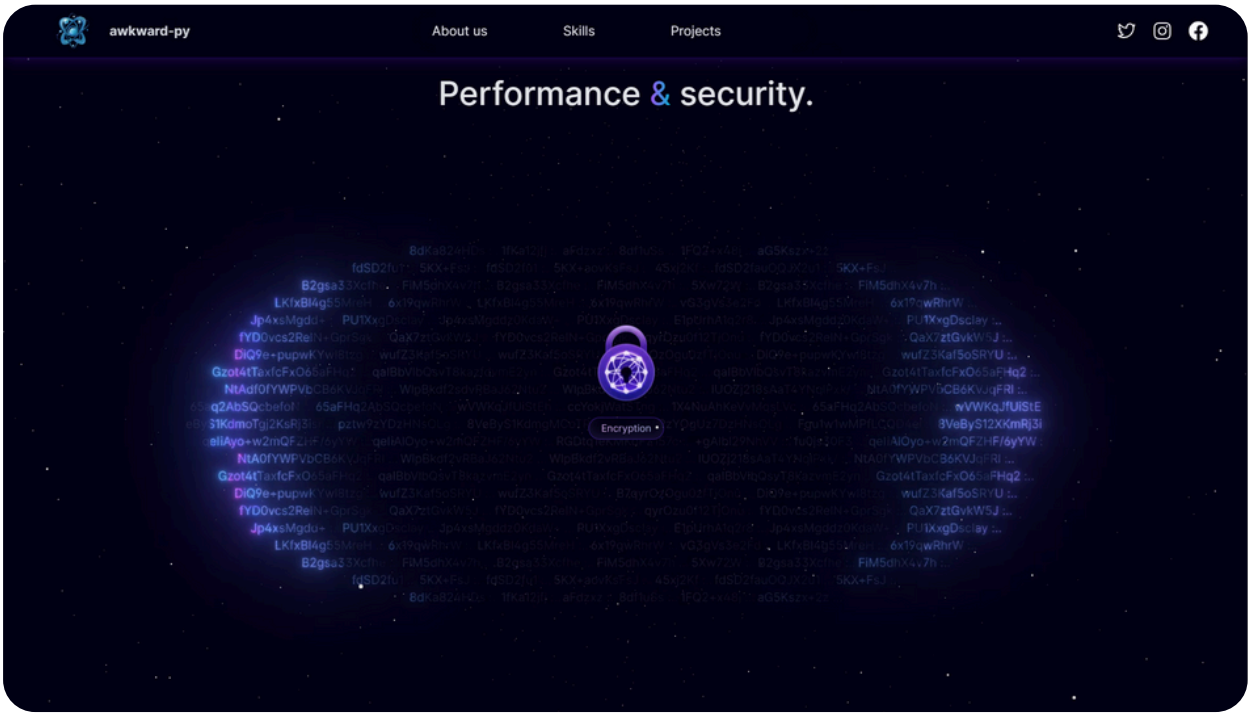


Landing Page

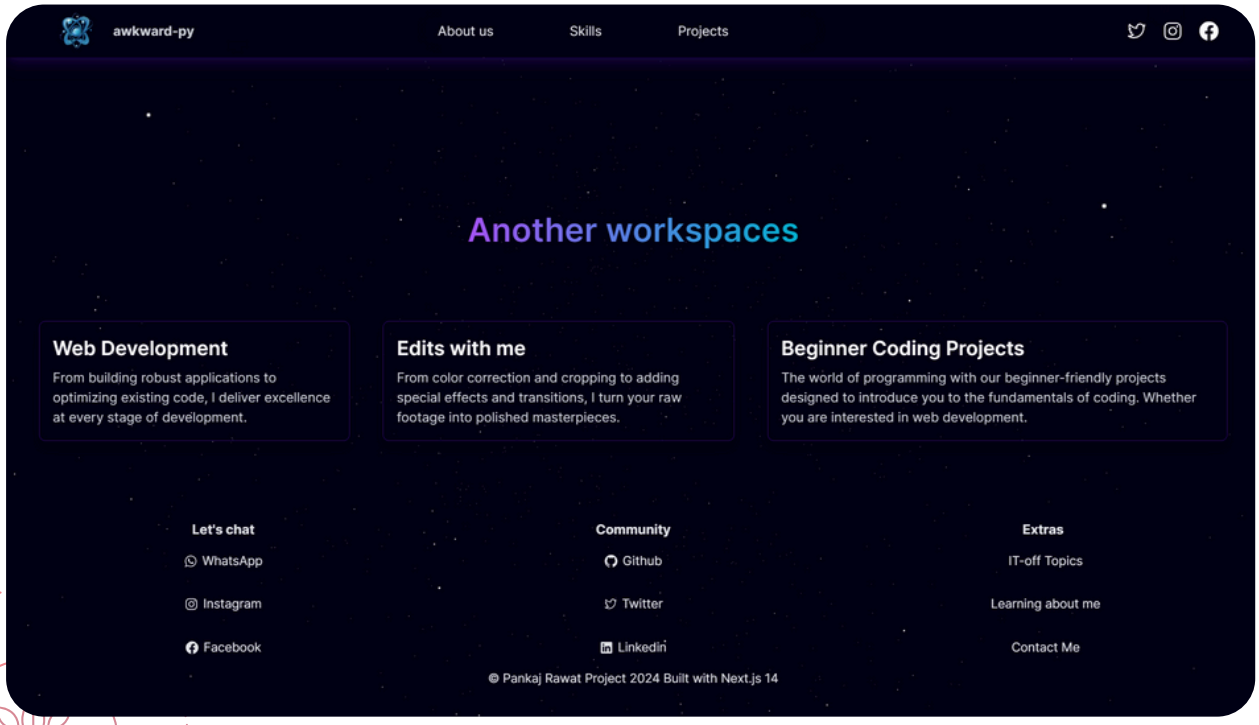


Tech-visuals section

Visual Preview



Security visual section



Workspace and Footer section