

Design Document

Ganesh's Homepage

CS5610 - Web Development

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1 Project Description

A professional portfolio website was developed to showcase technical skills, projects, and career journey through interactive visualizations. As an MS Computer Science student at Northeastern University with experience at Arista Networks, the goal was to create something that would stand out to recruiters and employers.

The main objective was to present qualifications in an engaging way that goes beyond a traditional resume. The target audience included technical recruiters, hiring managers, professors, and fellow developers who wanted to understand background and capabilities.

2 User Personas

2.1 Technical Recruiter

The design was created for recruiters who need to quickly assess candidates. They want to see technical skills clearly, find relevant experience fast, and evaluate how well someone presents themselves. They need easy navigation, clear skill visualization, and professional contact information.

2.2 Hiring Manager

Hiring managers want to dive deeper into technical abilities and problem-solving approaches. They were looking for detailed project descriptions, evidence of real technical work, and understanding of career progression. They needed proof that candidates can handle the technical challenges of their role.

3 User Stories

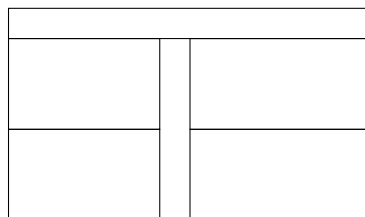
The following key functionalities were identified for users:

- As a recruiter, I want to see interactive skills visualization so I can quickly identify relevant expertise
- As a hiring manager, I want detailed project descriptions so I can assess technical capabilities
- As an employer, I want to view career timeline so I can understand professional growth
- As a user, I want responsive design so I can access it on any device
- As a visitor, I want smooth animations and interactions so the experience feels modern and engaging

4 Design Approach

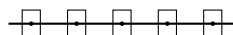
4.1 Wireframes and Layout Structure

The homepage was designed with a clean hero section featuring a large profile image on the left and name/title on the right. Below that, the page was split between an about section and the main creative feature - an interactive skills constellation.



4.2 Journey Page Mockup

The career was presented as a horizontal timeline that users can scroll through. Each milestone has an expandable card with detailed information.



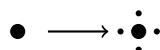
4.3 Projects Page Design

Projects were arranged in a circular menu that continuously rotates around a central hub.



4.4 Interaction Design

The skills constellation expands when clicked:



5 Technical Implementation

5.1 Technology Stack

Vanilla web technologies were used to demonstrate fundamental skills:

- HTML5, CSS3, ES6+ JavaScript
- ES6 Modules for clean code organization
- CSS Grid and Flexbox for responsive layouts
- GitHub Pages for deployment
- Prettier and ESLint for code quality

5.2 File Structure

```
portfolio/  
|-- index.html, journey.html, projects.html  
|-- css/styles.css (main stylesheet)  
|-- js/ (5 ES6 modules for different functionality)  
|-- images/ (profile photo and favicon)  
|-- package.json
```

6 Creative Features

6.1 Interactive Skills Constellation

This was implemented as the primary creative feature - a space-themed visualization where skills appear as glowing celestial bodies. Users click on main categories like "Programming" or "Web Development" to expand and see specific technologies arranged in smaller orbiting nodes. Trigonometric math was used to position everything in perfect circles, with smooth CSS animations for the expand/collapse interactions. This approach was chosen as it is more engaging than a traditional list of skills.

6.2 Rotating Circular Project Menu

Projects were arranged in a continuously rotating circle around a central "PROJECTS" hub. The math ensures perfect pentagon spacing (72 degrees apart). Users can hover to pause rotation and click for detailed modals. Each project circle was given a different gradient color and the text remains readable through counter-rotation. This creates a visually striking effect that makes browsing projects feel like exploring a solar system.

6.3 Horizontal Scrollable Timeline

Instead of a typical vertical timeline, a horizontal journey was created that users scroll through like they are traveling through a career. Cards expand inline when clicked, showing detailed information about each experience. Drag scrolling and mobile touch support were added so it works well on all devices.

7 Implementation Challenges

The biggest challenge was getting the circular positioning math right for both the skills constellation and project menu. Trigonometry had to be used to calculate perfect circular arrangements and ensure everything scales properly on different screen sizes. Significant time was spent optimizing animations for 60fps performance, especially on mobile devices. Using CSS transforms instead of changing layout properties was crucial for smooth animations. Making everything responsive while maintaining the circular layouts required careful media queries and flexible sizing strategies.

8 What Makes This Special

The portfolio goes beyond static presentations by creating an interactive experience. The skills constellation allows users to explore technical abilities in an engaging way, while the rotating project menu makes browsing feel dynamic and modern. The horizontal timeline tells the career story as an actual journey, which feels more personal and engaging than traditional resume formats. Everything was built with clean, semantic code that passes W3C validation and follows modern web development best practices.