Technical Specification: Dynamic Portfolio Architecture

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1 System Overview

The portfolio is a modular web application designed for high performance and maintainability. It utilizes a decoupled architecture where the content layer (JSON-like JS objects) is separated from the presentation layer (Bootstrap 5 Grid System).

2 Core Architecture

The system architecture is defined by a modular grid geometry and a calculated navigation logic, both of which are detailed in the subsections of the technical specifications below.

2.1 Grid Geometry

The layout follows a symmetric 2x2 matrix for primary resume components and a 1×3 vector for supplementary data:

- **Row 1:** Objective $\oplus$ Education
- **Row 2:** Skills $\oplus$ Work Experience
- **Row 3:** Volunteering $\otimes$ Projects $\otimes$ Contact

2.2 Navigation Calculus

Scroll visibility for the Navigation UI is determined by the following threshold logic:

$$f(s) = \begin{cases} \text{display: block} & \text{if } s > 150 \text{ px} \\ \text{display: none} & \text{if } s \leq 150 \text{ px} \end{cases}$$

where s represents the vertical scroll offset (`document.documentElement.scrollTop`).

3 Technical Implementation

- **Event Handling:** Utilizes `DOMContentLoaded` to ensure DOM readiness before script execution.
- **Memory Management:** Cached DOM references to minimize redundant `getElementById` calls during scroll events.
- **Version Control:** Managed via Git with a structured feature-branch workflow.