VEROTOUCH

Home Configurator

CSCI 370 – Advanced Software Engineering

Project Proposal

Why This is the Project You've Been Looking For

Imagine building the tool that lets a customer design their dream home, watch the price update in real time as they swap finishes and structural systems, and then purchase it directly—no realtor, no friction, no middleman. That's the Home Configurator, and it's your chance to ship a product that replaces an entire layer of the real estate industry while powering the sales engine at VeroTouch, the company behind Colorado's first 3D-printed homes. This isn't a sandbox demo destined for a server rack. Your prototype will feed qualified leads straight into VeroTouch's CRM, generate bills of materials for real builds, and give prospective homeowners a way to configure and pre-purchase homes built with cutting-edge 3D-printed concrete and SIP construction methods.

You'll own the full stack: modern front-end frameworks for an interactive, responsive UI, back-end services enforcing complex option dependencies and pricing logic, database design for catalogs and configuration rules, real-time state management, PDF generation, and cloud deployment. You'll also get to explore agentic development patterns and build something modular enough to scale with a fast-growing company. Work remotely on your schedule with weekly mentorship from VeroTouch's team, and walk away with a portfolio piece that proves you can design, build, and deliver real revenue-driving software. Strong performers get a direct line to internships and career opportunities at one of Colorado's most exciting construction-tech companies. The industry is ready to be disrupted—the only question is whether you'll be the team that does it.

Company Background

VeroTouch is a forward-thinking construction technology platform company headquartered in Salida, Colorado. Founded in 2023, VeroTouch is dedicated to inventing

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better ways to build and serving as a catalyst for positive change in the construction and manufacturing sectors. The company leverages robotics, automation systems, advanced material science, and repeatable processes to transform traditional building practices. VeroTouch provides comprehensive turn-key services, including architecture, design, engineering, automation, manufacturing, and construction.

The company specializes in innovative methods such as 3D construction printing of concrete homes and structural insulated panel (SIP) systems, while also incorporating hybrid and traditional stick-built approaches. VeroTouch has completed Colorado's first 3D-printed homes and is actively developing communities that combine these technologies to deliver sustainable, energy-efficient, cost-effective, and resilient housing solutions. By integrating technology with practical construction expertise, VeroTouch addresses critical challenges in housing affordability, sustainability, labor shortages, and workforce development. The company is committed to continuous innovation and welcomes collaboration with emerging talent through internships, apprenticeships, and project-based learning.

Project Description

VeroTouch seeks to develop a web-based Home Configurator application that will empower prospective customers to interactively customize homes built by the company. This digital tool will allow users to explore and select structural options, finishes, packages, and upgrades in real time, providing immediate visual and financial feedback. The configurator will support VeroTouch's innovative building methods, including 3D-printed concrete elements and structural insulated panels (SIPs), helping streamline the sales and pre-construction process while enhancing the customer experience.

Students will engage in every phase of the solution—from requirements gathering and system design through implementation, testing, documentation, and final delivery. The project will begin with an analysis of customer needs and VeroTouch's current option catalog, followed by the creation of a modular, scalable web application.

The system must handle the following core functionalities:

- Provide an intuitive, responsive web interface for browsing available home models, floor plans, and configuration categories (e.g., structural systems, exterior finishes, interior materials, energy-efficiency packages, and optional add-ons tailored to 3D-printed or SIP construction methods).

- Enable real-time selection and deselection of options with dynamic updating of the configuration summary, including automatic calculation of estimated pricing, material quantities, and basic compatibility checks.
- Implement logic to manage option dependencies and compatibility rules (for example, restricting certain finishes based on chosen structural systems or alerting users to incompatible combinations).
- Support saving, loading, and exporting completed configurations, such as generating PDF summaries with selected options, pricing breakdowns, and high-level visualizations.
- Include a clean administrative or backend interface for VeroTouch staff to manage the catalog of available options, pricing data, and rules (with basic CRUD operations).
- Ensure responsive design for use on desktops, tablets, and mobile devices, with attention to accessibility and user experience best practices.

The architecture should be modular to facilitate future expansions, such as integration with internal quoting or manufacturing systems, more advanced 3D model visualizations, or customer account features. Development may include a front-end framework for the user interface, a back-end service for business logic and data persistence, and a database for storing configuration rules, user sessions, and option catalogs. Students should consider cloud-based deployment options for scalability and security.

This project builds on the innovative ethos of VeroTouch and will result in a functional prototype that can be demonstrated to customers and internal stakeholders. Documentation of the system design, data models, and recommendations for future enhancements will be required as part of the final deliverables.

Outputs

The Home Configurator is not simply a buyer-facing customization tool—it must generate actionable outputs that feed directly into VeroTouch's sales and construction workflows. The platform must produce the following outputs:

- CRM Integration: Purchase intent and pre-purchase leads generated through the configurator must automatically populate into VeroTouch's CRM platform, capturing the buyer's configuration selections, contact information, and intent level without manual data entry.

- Bill of Materials (BOM): Each completed configuration must generate a detailed Bill of Materials derived from the buyer's selections, providing VeroTouch's construction and procurement teams with the specifications needed to plan and price each build accurately.
- In-Platform Purchase and Pre-Purchase: The tool must support buyers completing a purchase or pre-purchase transaction directly within the platform, eliminating the need for a traditional realtor and the associated costs. This includes the ability for buyers to select their preferred lot within a VeroTouch development, review available inventory, and proceed through a streamlined transaction flow.
- Configuration Specification Exports: Exportable specification documents (e.g., PDF) summarizing selected options, pricing, and build details for use by both the buyer and VeroTouch's internal teams throughout the sales and pre-construction process.

Desired Skill Set

The ideal team will bring a mix of the following skills, though expertise in all areas is not required. Students are encouraged to learn new languages, frameworks, or tools as part of the project, and mentorship will be provided to support technical growth:

- Web application development, including modern front-end frameworks (such as React, Vue.js, or Angular) for building responsive and interactive user interfaces.
- Agentic development approaches are strongly encouraged. Students should explore AI-assisted or agent-driven development patterns that produce clean, readable, and editable codebases. Identifying and working with a model or framework that will scale with VeroTouch's long-term needs—and that the VeroTouch team can actively use and build upon—is considered cutting-edge programming and is a welcome area of exploration for this project.
- Back-end development and API design (e.g., using Node.js/Express, Python with Django or Flask, or similar technologies) to handle business logic, option rules, and real-time updates. Students are encouraged to evaluate and select stacks based on long-term viability—choosing robust, well-maintained technologies with strong community support and a clear roadmap. Frameworks or libraries at risk of becoming unsupported or deprecated within a short timeframe should be avoided in favor of solutions that will remain reliable and actively maintained for years to come.

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- Database management and data modeling (e.g., SQL or NoSQL databases such as PostgreSQL or MongoDB) for storing configuration options, pricing data, dependency rules, and user sessions.
- State management and real-time functionality (e.g., handling dynamic updates to pricing and summaries without full page reloads).
- User interface and user experience (UI/UX) design principles, including responsive design, accessibility standards, and creation of clear visual feedback for user selections.
- Basic understanding of authentication, data security, and access control practices, given the sensitive nature of pricing and customer configuration data.
- Experience or willingness to work with version control (Git), collaborative development workflows, and deployment processes.
- Additional beneficial areas include cloud services (e.g., AWS, Azure, or Vercel for hosting), testing frameworks, and documentation tools.

The project will involve full-stack development, integration of front-end and back-end components, and consideration of modular, maintainable code structures.

Preferred Team Size

3–5 students. This range supports effective division of labor across front-end implementation, back-end logic and data management, business rule development, testing, and documentation, while fostering strong team collaboration.

Work Location

All work will be performed remotely. Students may utilize their preferred collaboration and communication tools. Regular virtual meetings (typically once per week) will be scheduled with VeroTouch mentors to accommodate campus academic responsibilities.

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Non-Disclosure Agreement and Intellectual Property

Students selected for this project will be required to sign a non-disclosure agreement (NDA). In addition, all intellectual property rights for the work performed and artifacts produced during the project will be assigned to VeroTouch.

Potential Internship Opportunities

VeroTouch actively offers internships, apprenticeships, and career opportunities in software development, design, engineering, automation, construction technology, and related fields. Strong performers on this project may be considered for post-course internship or extended learning opportunities.

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