VEROTOUCH

Home Facts

CSCI 370 – Advanced Software Engineering

Project Proposal

Why This is the Project You've Been Looking For

Ready to build something that hasn't existed before? HomeFacts is your chance to create a blockchain-powered platform that will fundamentally change how the world tracks, values, and trusts the places we live. You won't be shadowing a team or polishing someone else's legacy code. You'll be architecting a real product from the ground up at VeroTouch, the company behind Colorado's first 3D-printed homes and a rising force reshaping how the built world gets built. Your prototype becomes the foundation for a tool that homeowners, builders, and insurance companies will actually use to lower costs, preserve property history, and quantify home value in ways the industry has never seen.

This is full-stack work with teeth: modern front-end frameworks, back-end APIs, blockchain integration with Ethereum or Hyperledger testnets, smart contracts, cryptographic hashing, database design, and UI/UX that has to be genuinely intuitive for non-technical users. If you've been itching to get real hands-on experience with Web3 technologies—the kind recruiters are fighting over—this is it. Work remotely with flexible weekly check-ins that respect your academic life, receive direct mentorship from VeroTouch's engineering team, and gain a direct pipeline to internships and career opportunities for top performers. Bring 3–5 Mines students who want to ship something tangible, learn at the frontier of construction tech and blockchain, and walk away with a portfolio piece that tells employers exactly who you are: someone who builds the future instead of waiting for 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 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 "HomeFacts," a blockchain-based digital platform that enables homeowners, builders, maintenance professionals, and insurance companies to securely track and manage maintenance records for their homes. This system will provide an immutable, transparent, and verifiable digital ledger for recording and accessing important home maintenance information, thereby supporting long-term property care, documentation of work performed, and preservation of historical records.

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 focus on creating a functional prototype that demonstrates the core value of blockchain technology for secure maintenance record-keeping while remaining achievable within the available development time.

The system must handle the following core functionalities:

- A secure web-based user interface that allows homeowners and authorized users to view a property's maintenance history, including records of repairs, upgrades, inspections, and routine maintenance activities.
- Integration with a blockchain network (or blockchain simulator/testnet for the prototype) to record maintenance events in a tamper-evident manner, ensuring

that once information is added it cannot be altered without clear auditing and traceability.

- Mechanisms for adding new maintenance records, such as uploading documentation, service details, dates, descriptions of work performed, and supporting evidence (photos or invoices), with appropriate validation and hashing before blockchain commitment.
- Search and retrieval functionality by property address or unique home identifier, presenting the chronological history of maintenance events in a clear, accessible format.
- Basic access control and permission management to differentiate between homeowner access, authorized service providers, insurance companies, and other stakeholders. Insurance companies will be granted read access to verified maintenance records to support risk assessment and enable lower insurance premiums for well-maintained homes. Quality control documents generated during the construction process will also be permanently captured on the platform, providing insurers and future owners with a complete, immutable record of the build's quality assurance efforts.
- Generation of summary reports that compile verified maintenance records into an accessible, exportable format (e.g., PDF) for personal reference, property management, insurance documentation, or future transactions. The tool generates quality control documents from the construction process to permanently capture all QC efforts related to a home.
- Consideration of data privacy, security best practices, and scalability for future expansions, such as integration with additional data sources, automated reminders for scheduled maintenance, or expanded record types.
- A HomeFacts Value Calculator that quantifies documented maintenance history, quality control records, and other verified property data to dynamically estimate and update a home's value. HomeFacts will empower homebuyers, sellers, appraisers, and lenders with a data-driven home value estimate that reflects the true condition and care of a property. The calculator will factor in recency and completeness of maintenance records, verified QC documentation from construction, and other relevant metrics to produce an adjusted value score alongside traditional appraisal inputs.

The architecture should emphasize modularity, allowing for a front-end application, back-end services for business logic and data handling, and interaction with blockchain components (potentially using libraries for Ethereum, Hyperledger, or a testnet environment). Students should prioritize secure data handling, user-friendly design, and clear documentation of the blockchain integration approach. This prototype will serve as a foundation for demonstrating how blockchain can enhance reliable, long-term maintenance tracking for homes built with VeroTouch's advanced construction methods.

Desired Skill Set

The ideal team will bring a mix of the following skills, though expertise in all areas is not required. Students are strongly 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 intuitive user interfaces with clear data visualization.
- Back-end development and API design (e.g., using Node.js/Express, Python with Django or Flask) to manage data flows, validation logic, and interactions with external services.
- Understanding of or willingness to learn blockchain fundamentals, including distributed ledger concepts, smart contracts, hashing, and integration with blockchain platforms or testnets (e.g., via Web3.js, ethers.js, or similar libraries).
- Database management and data modeling (e.g., SQL or NoSQL databases such as PostgreSQL or MongoDB) for off-chain storage of supporting documents and metadata, combined with on-chain verification.
- User interface and user experience (UI/UX) design principles, focusing on accessibility, clear presentation of chronological data, and secure authentication flows.
- Data security, access control, and privacy practices, particularly important when handling sensitive property maintenance information.
- Experience or willingness to work with version control (Git), collaborative development workflows, testing frameworks, and basic deployment processes.
- Additional beneficial areas include cloud services for hosting, cryptographic concepts, report generation tools, and documentation of technical architectures.

The project will involve full-stack development with a strong emphasis on secure integration of traditional web technologies and blockchain components.

Preferred Team Size

3–5 students. This range supports effective division of labor across front-end implementation, back-end and blockchain logic, data modeling, security considerations, 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.

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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