Marlborough Restaurant Recommendation App Proposal

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DineWise App

MSDA 460

Proposal Overview: Consumer-Focused Restaurant Recommendation System
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Project Scope & Deliverables

The project is a consumer-facing recommendation system for Marlborough's restaurant scene, built to deliver dynamic, data-driven insights into customer preferences. It pulls in Yelp review data, refreshing restaurant listings monthly and reviews daily. The architecture is designed for scalability and modularity, keeping things flexible for inevitable feature requests post-launch—because if there's one constant in software development, it's that requirements always evolve.

The solution will consist of:
- **Frontend:** Built with **Alpine.js** and **Tailwind CSS** for lightweight, interactive, and highly responsive user experience.
- **Backend:** A **Go-based GraphQL API** powered by a **PostgreSQL database** (or EdgeDB/PocketBase as alternatives).
- **Data Processing & Recommender System:** Implemented in **Go, Python, or R**, leveraging **Yelp GraphQL API** for enriched business insights.
- **Cloud Deployment:** Hosted on a major cloud provider (**AWS, Azure, or GCP**) with CI/CD pipelines for seamless deployment and updates.

Project Timeline

Based on best-case, expected, and worst-case estimations, the anticipated timeline for delivering the **product prototype** is **8 to 12 weeks** from project kickoff. This includes:
1. **Requirements Analysis (1-2 weeks)** – Establishing core system functionalities.
2. **Software & System Design (2-3 weeks)** – Outlining backend structure and front-end interactivity.
3. **Development & Integration (4-6 weeks)** – Building and integrating API, database, and UI components.
4. **Testing & Refinement (1-2 weeks)** – Unit and system testing for robustness and reliability.
5. **Final Packaging & Delivery (1 week)** – Deployment and client onboarding.

Should additional independent contractors be onboarded, particularly **one extra full-stack developer and a cloud DevOps engineer**, the timeline could be **shortened to approximately 6-8 weeks** while maintaining quality and flexibility.

Cost Estimation

Ignoring costs associated with **software licensing and cloud hosting**, the estimated project budget is structured as follows:

Role	Hourly Rate ($)	Estimated Hours	Total Cost ($)
Project Manager	100	60	6,000
Full-Stack Developer 1	85	150	12,750
Full-Stack Developer 2	85	150	12,750
Cloud/DevOps Engineer	90	75	6,750
Data Engineer	95	100	9,500
Total Estimated Cost			$47,750

For an **expedited delivery timeline**, bringing in **additional resources (contractors)** would increase labor costs, likely adding an **additional $10,000-$15,000** depending on the exact workload distribution.

Risk & Uncertainty Management

Software projects rarely follow a completely linear path. Unexpected feature additions, integration challenges, or API changes can extend timelines. To mitigate risk:

- **Modular Development**: System components are built independently, allowing for future extensions without disrupting core functionality.
- **Stochastic Scheduling & Monte Carlo Simulation**: To better predict variations in development timelines, we can model multiple project paths and identify high-risk bottlenecks.
- **Iterative Releases & Feedback Loops**: Early-stage deployment with client feedback ensures that unexpected modifications don't derail the entire project.

Final Considerations

This project is designed to be a **scalable** and **future-proof** recommendation system. While the initial build focuses on **Marlborough, MA**, the architecture supports **multi-location expansion**. Additionally, the choice of **GraphQL** provides flexibility for extending API queries, while the use of **modern cloud infrastructure** ensures performance even as data volume scales.

If awarded the project, our team is prepared to move forward immediately, aligning with stakeholders to refine final requirements and establish clear milestones.

Estimated Delivery: 8-12 Weeks
Cost Estimate: $47,750 - $60,000 (depending on additional contractors & timeline acceleration)
Next Steps: Contract Review & Formal Kickoff Meeting
Looking forward to the opportunity to bring this vision to life.