[Link to Video](https://www.youtube.com/watch?v=M_DG94eLmr0) (🡨Ctrl + Click)

Intro

Brief overview of the three selected projects: ScaleSage, Q-Learning Pirate Maze, and Travlr Getaways

Purpose of the review: identify strengths and propose improvements

Structure of the review: focus on core areas relevant to software engineering, algorithms, and database management

Category 1: Software Engineering and Design (ScaleSage)

* UI Design and Component Structure
* Strengths in layout, color consistency, and readability
* Suggestions for modularizing UI elements to enhance reusability
* Data Visualization Enhancements
* Current functionality and readability
* Opportunities to improve user experience with trend lines, goal markers, and additional data visualization
* Error Handling and User Feedback
* Evaluation of current error-handling techniques
* Recommendations for adding robust error feedback and success notifications

Category 2: Algorithms and Data Structures (Q-Learning Pirate Maze)

* Algorithm Design and Implementation
* Overview of Q-learning concepts and the epsilon-greedy strategy
* Suggestions for enhancing learning efficiency with epsilon decay and early stopping logic
* Data Structures
* Discussion of maze representation and experience replay structure
* Recommendations for optimizing data structures, including prioritized experience replay for improved training
* Training Configuration and Optimization
* Current training loop and parameter settings
* Suggestions for additional training metrics, loss tracking, and regularization to improve model robustness

Category 3: Databases (Travlr Getaways)

* Database Schema Design
* Strengths of the current Trip and User schemas
* Proposals for additional schema validation, indexing, and a new Bookings schema for analytics
* Data Handling in API Controllers and Routes
* Strengths of CRUD functionality and user authentication
* Enhancements for data validation and route-specific analytics for user insights
* Backend Configuration and Security
* Review of current security settings and JWT usage
* Suggestions for RBAC, CORS restrictions, and connection pooling for efficiency and security

Conclusion

Summary of key insights from each project

General benefits of the proposed enhancements for usability, performance, and maintainability