Faith Rider

Our senior design project focuses on developing a detective-style video game that uses large language models (LLMs) to create dynamic dialogue systems that adapt to player interactions. As a computer science student, this project represents my exploration of AI applications in interactive entertainment while building on my broad educational approach to discover areas where I excel. The game will move beyond traditional scripted dialogue trees by implementing AI-generated responses that remember context and evolve based on player behavior. I'm handling the UI design and visual assets, combining my technical skills with creative elements to create an intuitive user experience. This project challenges me to integrate software engineering, AI implementation, and user interface design into a cohesive product. The work aligns with my goal of contributing something innovative to the gaming community while demonstrating practical machine learning applications. Through this project, I aim to deepen my understanding of both game development and AI integration while creating a novel gaming experience.

My computer science curriculum provides the technical foundation needed for this AI-driven game development project. Data Structures (CS2028C and CS2024C) and Algorithms (CS4071) taught me efficient system design and problem-solving approaches essential for managing game states and AI processing. Python Programming (CS2023) gave me proficiency in the primary language for AI frameworks that will drive our LLM integration. I'm currently taking Deep Learning (CS5173), which directly applies to understanding neural networks and fine-tuning language models for dialogue generation. My AI course (CS6033) covered machine learning algorithms, natural language processing, and ethical AI considerations for user-facing applications. The User Interface I course (CS5167) I'm currently enrolled in is crucial for my role as UI designer, teaching me to create intuitive interfaces that showcase our dialogue system effectively. These courses collectively prepare me to handle both the technical AI implementation and user experience design aspects of the project.

My co-op experiences provide both technical skills and professional insights crucial for this project's success. At Genetesis as a Software Engineer Co-op, I gained full-stack development experience and worked independently to upgrade existing systems, skills directly applicable to building integrated game architecture. During two rotations at Siemens on the NX Integration team, I handled technical debt and implemented quality-of-life features, developing debugging abilities that will help optimize game performance. My fourth co-op at Siemens as a Global Partner Sales Co-op was particularly relevant—I researched and created AI agent solutions for sales teams, gaining hands-on experience with AI implementation and prompt engineering. At BNY as a Digital Assets Intern, I focused on technical writing and documentation for complex systems, skills essential for documenting our AI dialogue system and creating user guides. These roles taught me project management, cross-functional collaboration, and user-centered design principles. The combination of technical implementation experience and AI research background positions me well to tackle both the development and documentation aspects of our game project.

This project excites me because it combines my love for video games with cutting-edge AI technology to create something genuinely novel. I've enjoyed making simple games previously, and this represents a significant step up that will teach me about comprehensive game development processes. Traditional game dialogue has relied on static, predetermined scripts for decades—our AI-driven approach can create unique experiences where characters respond intelligently to unexpected player inputs. The interdisciplinary nature appeals to me, combining technical CS skills with creative UI design work that aligns with my broad exploration of the field. I'm motivated by the opportunity to contribute something meaningful to the gaming community while demonstrating practical AI applications in entertainment. The project represents more than a technical challenge; it's a chance to enhance player experiences through AI that augments rather than replaces human creativity. This work will help me discover my strengths within computer science while creating an engaging product that brings value to users.

My approach involves phased development starting with core functionality before expanding to advanced features. I'll begin by researching LLM frameworks, establishing basic game architecture, and creating a prototype demonstrating AI dialogue in a minimal game environment. Next, I'll develop UI components to present the AI system intuitively, ensuring the interface enhances rather than distracts from gameplay. Iterative testing with user feedback will guide refinements to both AI responses and interface design throughout development. I expect to successfully integrate an LLM into a functional game, create an effective UI showcasing dynamic dialogue, and produce documentation for other developers. Success metrics include contextually appropriate AI responses, high user engagement during testing, intuitive interface usability, and overall system stability. I'll consider the project complete when users can engage in meaningful, varied AI conversations that feel natural and enhance their experience. The final deliverable should demonstrate both technical achievement and creative possibilities of AI-enhanced game dialogue systems.