📄 **Proposal: CodeLens AI – AI-Powered Bug Reproduction & Fix Assistant**

🧠 **Purpose**

CodeLens AI is an intelligent assistant designed to **automate bug reproduction and recommend fixes** from natural language bug reports. Developers and QA teams often struggle to reproduce and resolve complex or sporadic bugs, which slows down software delivery and frustrates users. This tool leverages AI to **interpret user-submitted bug reports**, **trace code paths**, and **suggest potential fixes**, reducing debugging time and increasing developer efficiency.

⚙️ **Workflow**

1. **User Bug Report Input**
   Users report issues in natural language (e.g., "The app crashes when I try to upload a profile photo").

2. **Natural Language Processing (NLP)**
   The report is parsed using NLP (e.g., OpenAI Codex/GPT-4) to extract actionable steps, states, and keywords.

3. **Code Path Analysis**
   The AI cross-references keywords with the codebase to predict affected modules and logic flows.

4. **Bug Reproduction**
   CodeLens AI simulates the bug scenario using automated tools like **Selenium** or **Playwright**.

5. **Fix Recommendation Engine**
   The AI suggests possible solutions based on similar patterns from open-source bug-fix databases (GitHub, StackOverflow).

🌐 **Impact**

- 💡 **Faster Bug Resolution**: Reduces the time spent reproducing and fixing bugs by up to 70%.

- 📈 **Increased Test Coverage**: Surfaces edge cases often missed in manual QA.

- 🔒 **Improved Software Quality**: Fix suggestions reduce regressions and improve code reliability.

- ⚙️ **Scalable for Agile**: Ideal for fast-moving dev teams where every sprint counts.