Title: **CodeSense – AI-Powered Technical Debt Identifier**

Purpose
Modern software projects often accumulate technical debt—poor coding practices, quick fixes, or outdated logic—that compromise maintainability and scalability. Manual identification of this debt is slow, subjective, and often ignored. **CodeSense** is an AI-powered tool that automatically identifies, categorizes, and prioritizes technical debt in codebases, enabling developers to proactively maintain clean, efficient software.

Workflow

1. **Integration**
   CodeSense integrates into popular IDEs (e.g., VS Code, IntelliJ) or CI/CD pipelines to analyze source code and version control history.
2. **AI-Powered Analysis**
   - **NLP Engine** scans comments and commit messages for keywords like "TODO", "FIXME", and other debt indicators.
   - **Machine Learning Models** detect code smells (e.g., long methods, god classes, duplicate code) using labeled datasets.
   - **Temporal Change Analysis** highlights frequently modified or unstable files as high-risk areas.
3. **Scoring & Prioritization**
   Each module is given a Technical Debt Score. A dashboard visualizes these scores, helping teams target critical areas.
4. **Recommendations**
   Using generative AI, CodeSense offers actionable suggestions for refactoring or improving code, referencing best practices and documentation.

Impact

- **Improved Code Quality**: Teams catch problems early and reduce bug introduction.
- **Cost Savings**: Reduces long-term rework and maintenance overhead.
- **Team Efficiency**: Developers focus efforts on high-impact areas, guided by real-time insights.

CodeSense transforms technical debt management into a continuous, intelligent, and automated process—driving sustainable, scalable software development.