Individual Contribution Report – Loan Review Assistant

# 1. Introduction

This report outlines my individual contributions to the development of the Loan Application Review Assistant, an AI-powered system for reviewing and explaining loan decisions.

# 2. Main Contributions

## 🔹 Application Development

- Implemented the Streamlit user interface with a professional layout.  
- Added sidebar controls for selecting applications, AI models, and retrieval options.  
- Designed decision summary with metrics, policy checks table, and explanations.  
- Enhanced the interface with plain professional background styling for a polished demo.

## 🔹 Backend & Agent Logic

- Integrated the LLMClient for AI explanations using Ollama and TinyLlama.  
- Connected UI with backend logic to fetch and display loan decisions.  
- Implemented support for both rule-based policy checks and LLM explanations.

## 🔹 Data Management

- Worked with synthetic datasets (loan\_applications.csv, kyc\_watchlist.csv).  
- Ensured smooth data loading using relative paths (Path(\_\_file\_\_)) for portability.

## 🔹 Features for Transparency & Usability

- Developed colored policy checks table (green/yellow/red for Pass/Warn/Fail).  
- Added tabs for rule-based vs. LLM explanations to improve decision transparency.  
- Implemented downloadable decision report for auditability.

## 🔹 Testing & Improvements

- Identified missing policy file issue and added safe guards.  
- Debugged file path errors for data loading and provided fixes.  
- Enhanced project structure for easier deployment and demonstration.

## 🔹 Documentation & Demo Preparation

- Prepared a demo narration script for video presentation.  
- Created detailed explanations of project improvements, UI design, and technical flow.

# 3. Challenges Faced

- Data Path Issues: Initially, the application failed to locate loan\_applications.csv because of relative path mismatches. Solved by using Python’s Path(\_\_file\_\_) for dynamic path resolution.  
- UI Professionalism: The default Streamlit output looked like a prototype. I restyled it with sidebar controls, colored tables, and clean layout.  
- LLM Connectivity: The app depends on Ollama running locally. Setting up and handling fallbacks required debugging.  
- Policy File Gap: The backend expected a missing policy file. I added safe handling so the system still works.  
- Testing Inconsistencies: Some placeholder test files failed. I aligned testing logic with implemented features.  
- Time Constraints: Balancing UI polish, backend logic, and demo preparation within the project timeline was challenging.

# 4. Key Outcomes

- Built a professional, functional demo application aligned with assignment requirements.  
- Improved user interface and usability for clearer loan review insights.  
- Delivered transparent decision-making process with explainable AI.  
- Addressed technical and design challenges through iterative debugging and refinement.

# 5. Conclusion

My contributions focused on transforming the Loan Review Assistant into a polished, user-friendly, and transparent tool. The combination of strong UI design, backend integration, data management, and documentation ensures the system meets both functional and academic expectations.