IBM AI AR techdoc

Ani Bitri

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1 Problem Statement

1.1 Introduction and Context

Technical documentation plays a critical role in helping developers understand, implement, operate and maintain software systems. In enterprise environments, documentation is the primary interface between developers and complex systems, making clarity and accessibility essential. However, despite its importance, technical documentation remains predominantly static, text-based and difficult to navigate. As systems grow in complexity, dynamic processes such as data flows, dependencies and interactions are often poorly represented in traditional documentation formats. Consequently, many users often struggle to find the information they need, leading to frustration, errors and inefficiencies. This raises the need for innovative solutions that can enhance the user experience and improve comprehension of technical documentation.

1.2 Existing Technologies

1.3 Gaps in Current Solutions

1.4 Problem Definition

2 Project Overview

2.1 Purpose

Many developers face challenges while reading and understanding technical documentation. This project aims to create an AI-powered mobile application which, supported by AR technology, will enhance the user experience by providing interactive and immersive documentation. Powered by IBM Watson/Grantie, the app will offer several features to assist developers in navigating and comprehending complex technical documents, including text recognition, interactive AR overlays, chatbot assistance and more.

2.2 Objectives within the scope

The primary objectives of this project are to:

1. Implement AR diagram augmentation
    - Detect and track diagrams in printed and digital forms.
    - Overlay interactive elements on diagrams to provide additional context and explanations.
2. Integrate an AI assistant
    - Employ IBM Watson/Granite to interpret the scanned documentation text and answer user queries.
    - Support natural lanugage questions such as "What is the purpose of this diagram?" or "Explain this concept in simpler terms.".
3. Preserve accessability and compliance
    - Keep the core document unchanged and externalize enhancements through AR overlays to comply with accessibility and legal requirements.
4. Develop a functional mobile prototype

- Deliver a working mobile application prototype that demonstrates the key features and functionalities.
- Conduct user testing to gather feedback and refine the application.
- Provide a short demonstration.

2.3 Boundaries and Out-of-Scope Elements

To keep the project achievable within the given timeframe, the following elements are considered out of scope:

- Full production deployment or enterprise-level integration.
- Hardware-specific AR is excluded; the focus is on mobile devices.
- Cross-platform optimization beyond the primary target platform (e.g., iOS or Android).

2.4 Expected Deliverables

- A prototype mobile application demonstrating real-time recognition and overlay of technical documentation.
- Integrated AI assistant interface capable of answering user queries based on the documentation content.
- A comprehensive project report detailing the design, implementation, testing processes and evaluation results.
- VIVA presentation and demonstration.

2.5 Target Outcomes

- Enhanced user experience for developers interacting with technical documentation.
- Improved comprehension of complex technical concepts through interactive AR elements and AI assistance.
- A foundation for future development and potential commercialization of the application.

3 Requirements

Each requirement will be described in the format RnC/D, where n is the requirement number and C or D indicates whether the requirement is customer (C) or developer (D) oriented. For example, R1C refers to the first customer requirement, while R2D refers to the second developer requirement. Each requirement will be detailed with its description, priority, verification method and traceability.

3.1 Functional Requirements

List the key functionalities the software system must support. Provide clear and concise descriptions of features and interactions.

1. **Augmented Reality System**

3.2 Non-Functional Requirements

Outline performance, usability, reliability, and other quality attributes expected from the system.

4 System Architecture

Provide a high-level overview of the system architecture. Include diagrams where appropriate to illustrate the system components and their interactions.

4.1 Component Diagram

4.2 Frontend Design

4.3 Backend Design

4.4 Technology Stack

List the technologies, programming languages, frameworks, and tools that will be used in the project.

5 Development Plan and Project Philosophy

5.1 Methodology

Describe the development methodology (e.g., Agile, Waterfall) that will be followed during the project lifecycle.

The project will follow the Scrum Agile methodology.

5.2 Time Management and Milestones

Detail the project timeline with key milestones and deliverables.

5.3 Resource Management

Outline the resources (e.g., personnel, equipment) required for the project and how they will be allocated.

5.4 Risk Management

Identify potential risks and outline strategies for mitigating them.

6 Conclusion

Summarize the key points of the specification document and outline next steps.