TED UNIVERSITY

SENG 491 - SENIOR PROJECT

Intelligent Documentation Assistant for SRS (IDAS)

Project Analysis Report

Fall 2025

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Name	Date	Reason For Changes	Version
Project Analysis Report-1.0	30.11.2025	First version of Project Analysis Report.	1.0
Project Analysis Report-2.0	28.12.2025	Changes according to feedback gathered from HAVELSAN.	2.0

1. Proposed System

1.1 Overview

The proposed system is a web-based platform that helps users create and review Software Requirements Specification (SRS) documents compliant with HAVELSAN standards. The system consists of two main modules:

Authoring Mode, which allows users to write SRS sections using HAVELSAN-based templates, Its AI-powered suggestion system also finds terminology mismatches, finds missing headings, and recommends draft requirement statements that are appropriate for the situation.

Review Mode, analyzes the document by extracting requirement statements from completed SRS documents, classifying them as Functional or Non-Functional, and identifying quality issues such as ambiguity, untestability, duplication, and potential conflicts based on the Uncertainty and Quality Checklist. The findings are presented through user-friendly visual reports and are intended as recommendations for analysts rather than formal verification results.

1.2 Functional Requirements

1.2.1 Authoring Mode Requirements

#	Requirement Description
FR 1	The system shall allow the user to create an SRS document and enter text based on templates compliant with the HAVELSAN standard.
FR 2	The system shall detect missing standard HAVELSAN sections or headings in the active document.
FR 3	The system shall analyze the text against a predefined terminology glossary and detect usages that are incompatible with standard terms.
FR 4	The system shall suggest draft requirement sentences appropriate to the user's writing context.

1.2.2 Review Mode Requirements

#	Requirement Description
FR 5	The system shall allow the user to upload an SRS document from their local system.

FR 6	The system shall parse the text and basic structure (headings, paragraphs) of the uploaded .docx format document.
FR 7	The system shall extract and identify requirement statements from imported documents.
FR 8	The system shall classify each requirement as Functional or Non-Functional, including relevant subcategories.
FR 9	The system shall analyze the requirements based on the Uncertainty and Quality Checklist.
FR 10	The system shall detect and flag expressions containing ambiguity, untestability, duplication, and conflicts as a result of the analysis.
FR 11	The system shall generate and present a visual report containing the findings detected in Review Mode (classification results and flagged defects).

1.3 Non-functional Requirements

#	**Requirement Description**
NFR 1	The platform shall be a web-based application.
NFR 2	Review Mode shall be optimized primarily for the .docx file format.
NFR 3	The system shall support the authoring and review of SRS documents that comply with the HAVELSAN standard.
NFR 4	The system shall handle incomplete or malformed documents without crashes.
NFR 5	User data shall remain private and never shared with unauthorized parties.
NFR 6	The architecture shall be modular, enabling independent updates to AI and UI components.
NFR 7	The backend shall support multiple users and concurrent document analyses.
NFR 8	The web application shall operate on major browsers (Chrome, Edge, Firefox).

1.4 Pseudo Requirements

#	Requirement Description
PR 1	The system shall be developed as a web-based application.
PR 2	All user interaction shall occur through a browser-based interface.
PR 3	The Authoring Mode shall employ the HAVELSAN SRS template.
PR 4	The Review Mode shall support only .docx files in the initial version.
PR 5	.docx parsing shall be constrained by the capabilities of the selected parsing library.
PR 6	AI processing capacity shall be limited by the available CPU/GPU hardware.
PR 7	User data shall not be used for model training.
PR 8	Formal verification of requirements shall not be performed; only recommendations and quality analysis shall be provided.
PR 9	Only textual SRS content shall be analyzed; diagrams shall be excluded.
PR 10	Access shall be restricted to registered users; anonymous usage shall not be supported.
PR 11	The project shall be completed within two academic semesters within the scope of the SENG 491–SENG 492 course sequence.
PR 12	No documents shall be shared with third-party services.
PR 13	The system shall not operate offline; internet connectivity shall be required.
PR 14	The system shall review only one document at a time.
PR 15	Uploaded documents shall be stored only temporarily.
PR 16	The technological stack (front-end, back-end, and LLM API components) shall be determined based on technical feasibility and resource availability.
PR 17	The analysis results produced by the system shall be of a recommendatory nature, and the final decision will be left to the user.

1.5 System Models

1.5.1 Scenarios

Creating an SRS from Scratch

Goal: The user wants to create a new SRS document that complies with HAVELSAN standards.
Actor: Registered User
Trigger: The user selects "Create New SRS" in the control panel.

Main Flow:

1. The user logs in to the system.
2. The user selects "Create New SRS."
3. The system displays the HAVELSAN template in the left pane.
4. The user begins filling in the sections.
5. The AI engine provides suggestions, terminology tips, and draft sentences.
6. The user edits and/or accepts the suggestions.
7. The user completes all required sections.
8. The user exports the SRS.

Postcondition: A complete SRS document compliant with HAVELSAN standards is created.

Reviewing an Existing SRS

Goal: The user wants to analyze the quality of a completed SRS.
Actor: Registered User
Trigger: User selects "Upload SRS for Review."

Main Flow:

1. User logs in to the system.
2. User uploads a .docx file.
3. The Review Engine extracts requirements from the uploaded document.
4. The system classifies each requirement as either Functional or Non-Functional.

5. Ambiguity, unverifiability, duplication, and conflicts are identified based on the Quality Checklist.

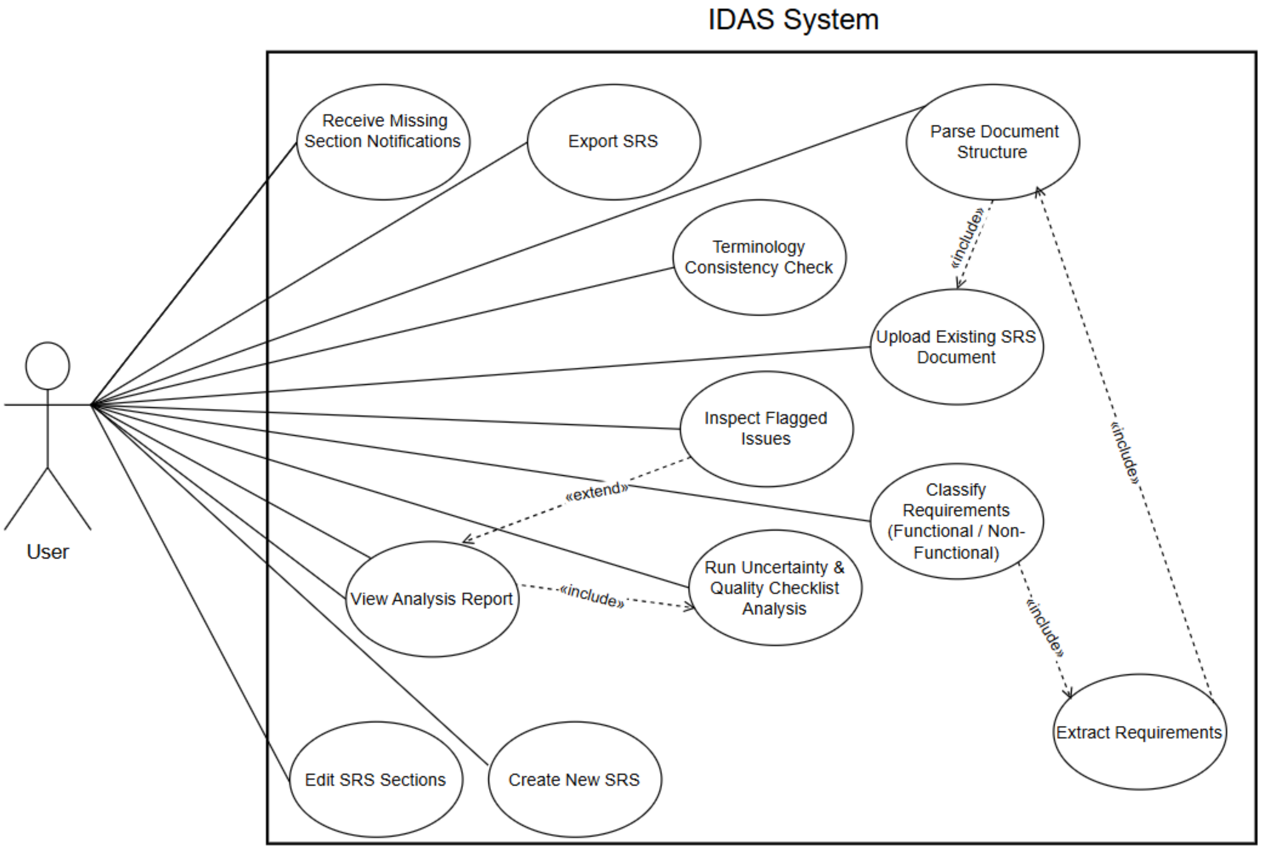
6. The system generates a report with visual and textual content.

7. The user views the highlighted problematic requirements.

Postcondition: The user receives a detailed quality report.

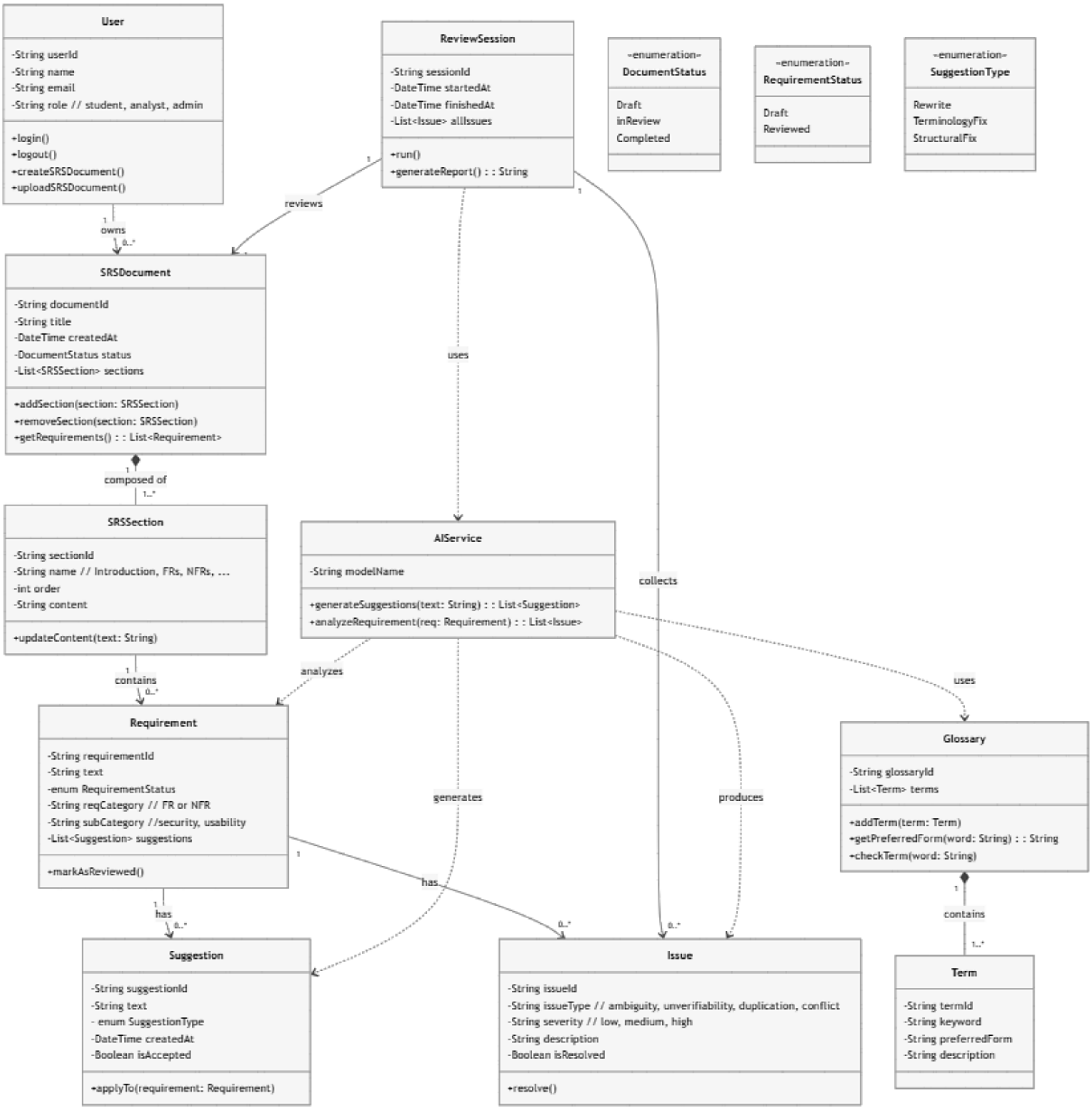
1.5.2 Use Case Model

The Use Case Model summarizes the primary interactions between users and the system based on the functionalities. It captures how registered users create SRS documents using HAVELSAN-based templates in Authoring Mode and how they upload and analyze existing SRS documents in Review Mode. The model illustrates the main actors, their goals, and the system responses during SRS creation, editing, and document quality analysis. These use cases collectively describe the functional scope of the platform and provide a structured view of how users engage with the core features of the system.


IDAS System
User
Receive Missing Section Notifications
Export SRS
Parse Document Structure
Terminology Consistency Check
«include»
Upload Existing SRS Document
Inspect Flagged Issues
«include»
«extend»
Classify Requirements (Functional / Non-Functional)
View Analysis Report
«include»
Run Uncertainty & Quality Checklist Analysis
«include»
Extract Requirements
Edit SRS Sections
Create New SRS

1.5.3 Object and Class Model

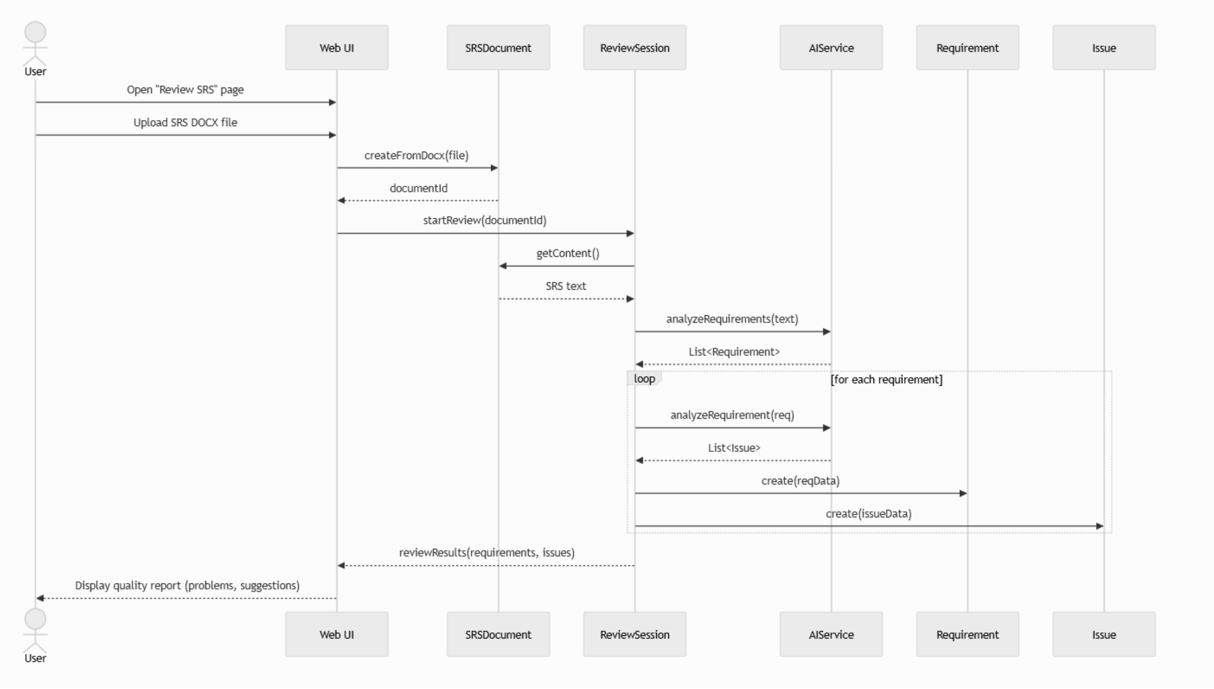
The Object and Class Model provides a structural view of the system by identifying the key objects, their attributes, and the relationships between them. It reflects the two core functionalities of the platform—Authoring Mode and Review Mode—by modeling components such as the SRSDocument, Requirement, AISuggestionEngine, and ReviewEngine. The model outlines how documents are created, parsed, analyzed, and enriched with AI-generated suggestions. These class definitions serve as the foundation for implementing the system's behavior and ensure that all functionalities described in the functional requirements are supported by a coherent and organized software structure.



1.5.4 Dynamic Models

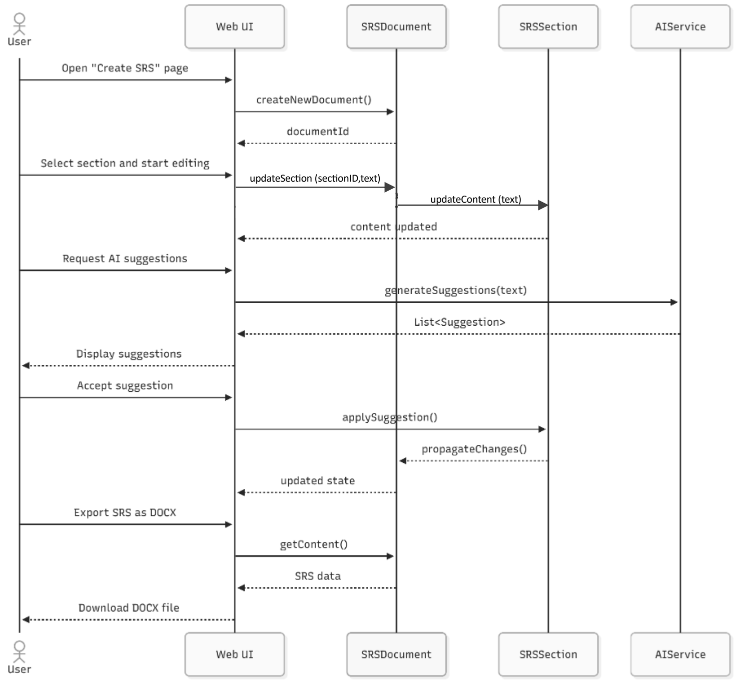
Sequence Diagram for Review Mode

The Sequence Diagram for Review Mode illustrates the step-by-step interaction between the User, the System Interface, and the Review Engine during the analysis of an uploaded SRS document. It shows how the user initiates the review process by uploading a .docx file, after which the Review Engine parses the document, extracts requirement statements, classifies them as Functional or Non-Functional, and evaluates them using the Uncertainty and Quality Checklist. The diagram concludes with the system generating and returning a visual quality report to the user. This sequence captures the complete flow of Review Mode as defined in the functional requirements.



Sequence Diagram for Authoring Mode

The Sequence Diagram for Authoring Mode illustrates the interaction flow that takes place when a user creates an SRS document using the HAVELSAN-based template. It shows how the user initiates the process by selecting “Create New SRS,” how the system provides the predefined section structure, and how the AI Suggestion Engine offers optional draft sentences and terminology guidance as the user enters content. The diagram captures the collaborative steps between the user and the system while the document is being constructed, ending with the export of the completed SRS in .docx format. This sequence reflects the functional behavior defined for Authoring Mode.



1.5.5 User Interface/Navigational Paths and Screen Mockups

IDAS's user interface is designed as a minimal, user-friendly application that guides users through the workflows of Authoring Mode and Review Mode. After authentication, the user is directed to a dashboard where they can create a new SRS document or upload an existing document for review. Each mode is presented as a dedicated screen with clear actions and contextual guidance.

The system's main screens are:

Login/Registration Page: Allows users to verify (via email, username and password) and access existing SRS documents after registering/logging in.

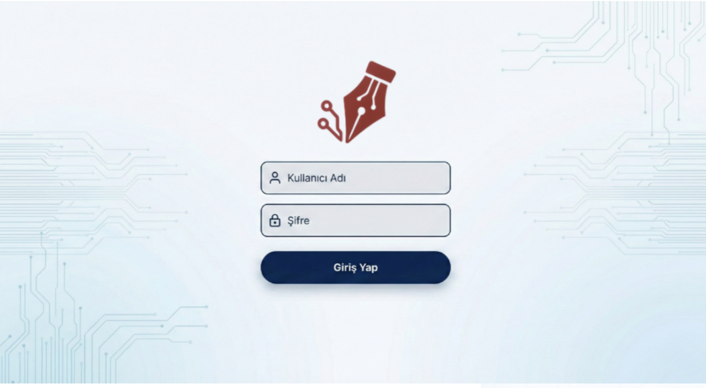
Dashboard: Provides entry points to Authoring Mode and Review Mode.

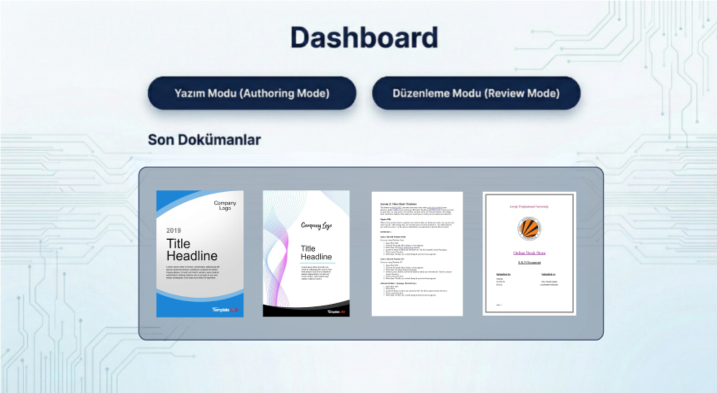
Authoring Mode Screen: Presents the HAVELSAN-based SRS template, with a section list on the left, an editable content area in the middle, and an AI suggestions panel on the right.

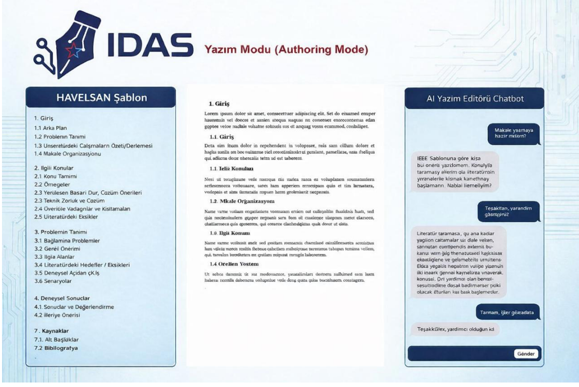
Review Mode Screen: Allows the user to upload a .docx file and initiate an automated review process.

Review Report Screen: Displays the extracted requirements, their classifications, and identified issues.

Navigation across screens is provided through a top-level menu and clearly labeled buttons. In Authoring Mode, users can create a new SRS and request AI-generated draft sentences while writing. In Review Mode, after the analysis is completed, the system directs the user to the report screen where problematic requirements are highlighted.







1. Giriş
1.1 Arka Plan
1.2 Problenın Tanimi
1.3 Unseretürdeki Calşmalarn Özeti/Derlemesi
1.4 Makale Organizasyonu

2. Ilgili Konular
2.1 Konu Tamimi
2.2 Ömegeler
2.3 Yerülesen Basari Dur, Cozüm Önerileri
2.3 Teknik Zorluk ve Cozüm
2.4 Överiöle Vadagnlár ve Kisitamalan
2.5 Uiteratürdeki Eksikler

3. Problemin Tanimi
3.1 Bağlamina Problemler
3.2 Gerél Önérimi
3.3 Ilgía Alanlar
3.4 Literatürdeki Hedefler / Eksikleri
3.5 Deneysel Açidan çK.İş
3.6 Senaryolar

4. Deneysel Sonuclar
4.1. Sonuclar ve Değeriendirme
4.2 illeriye Önerisi

7 . Kaynaklar
7.1. Alt Başlüklar
7.2 Bibilografya

1. Giriş

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Tamam, işler göeadata

Teşakküfex, yardimcı olduğun kd

2. Glossary

IDAS : Intelligent Documentation Assistant for SRS
SRS: Software Requirements Specification
FR: Functional Requirement
NFR: Nonfunctional Requirement
PR : Pseudo Requirement
LLM: Large Language Model

3. References

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