

A THESIS SUBMITTED BY

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To

Department of Computer Science in partial fulfilment of the requirement for the Degree of
BACHELOR OF COMPUTER SCIENCE Accepted by the faculty

FACULTY OF ENGINEERING SCIENCE AND TECHNOLOGY

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ACKNOWLEDGEMENT

We would like to express our sincere gratitude to our supervisor, Faisal Ahmed, for his guidance and support throughout this project.



ABSTRACT

The modern on-demand service economy suffers from inefficiencies related to inaccurate matching, lack of contextual understanding, and delayed service fulfillment. Traditional service platforms rely heavily on keyword-based listings, which fail to capture the real-world complexity of service requests.

ServeFlow AI addresses this problem by integrating **Multimodal Generative AI (Vision + Text)** with a **Context-Aware Geospatial Matching Engine**. By leveraging Google Gemini for visual and textual analysis, the system generates high-fidelity technical directives from user-submitted descriptions and site images. These directives enable accurate provider matching based on skill relevance, proximity, availability, and reputation.

The proposed system significantly reduces time-to-hire, improves trust, and enhances operational efficiency within the service marketplace ecosystem.





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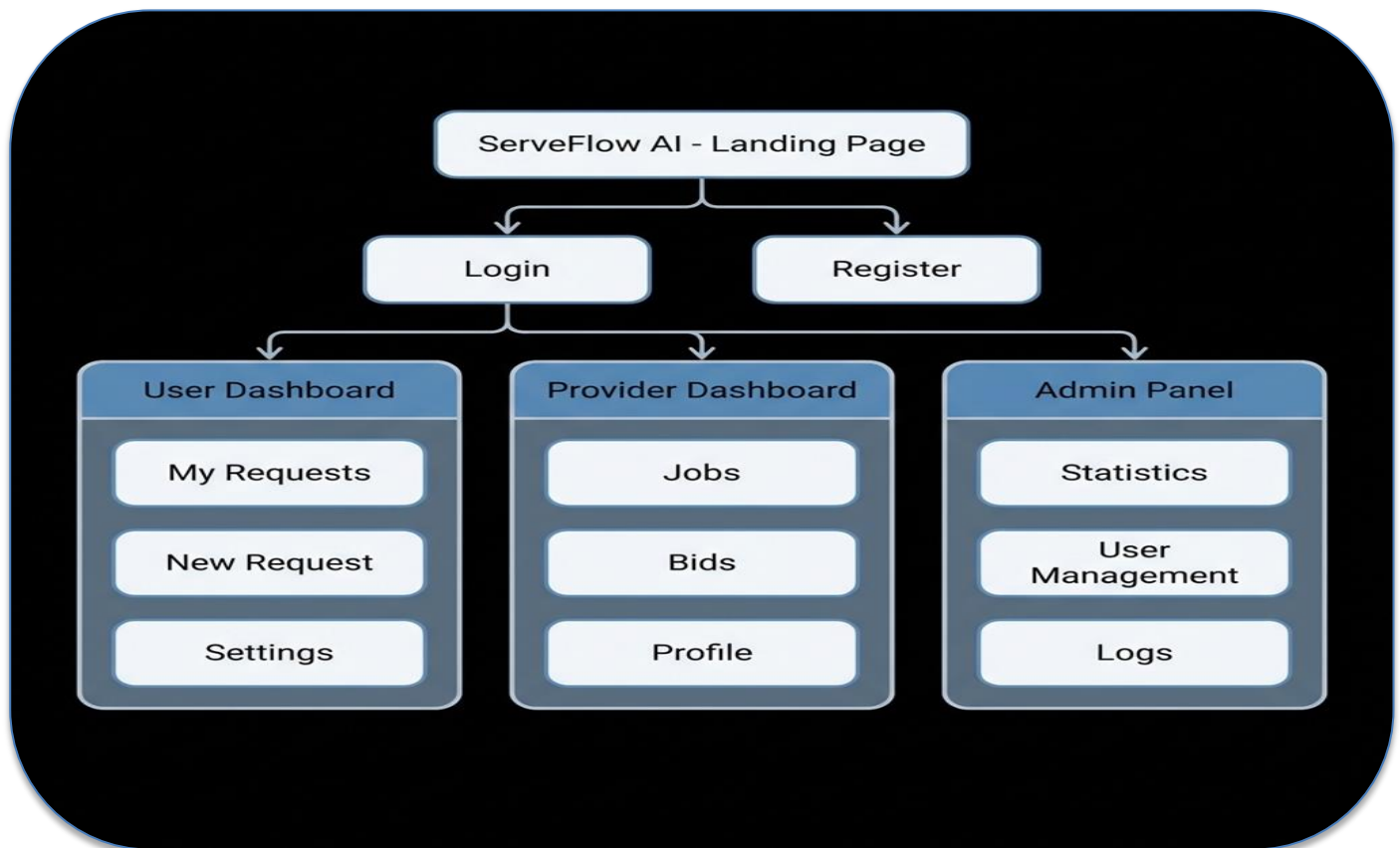
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CHAPTER 1:

INTRODUCTION

ServeFlow AI is a next-generation intelligent service aggregation platform designed to bridge the contextual gap between service seekers and providers. By utilizing AI-driven analysis and geospatial intelligence, the platform enhances service accuracy, response time, and user satisfaction.



1.1 BACKGROUND

The service marketplace industry faces persistent challenges such as inefficient provider discovery, lack of transparency, and miscommunication between users and professionals. Existing platforms do not adequately differentiate between similar service requests with varying technical scopes.

1.2 PROBLEM STATEMENT

Traditional service platforms rely on static listings and keyword matching, resulting in irrelevant recommendations and delayed hiring processes. Users are required to manually filter results, increasing frustration and reducing trust in digital service systems.

1.3 OBJECTIVES

- To design an AI-driven service matching system
- To reduce service hiring time using contextual intelligence
- To integrate multimodal AI for visual and textual understanding
- To improve trust and accuracy in service recommendations

1.4 RESEARCH QUESTIONS

- How can multimodal AI improve service context understanding?
 - Can geospatial intelligence reduce service response time?
 - How effective is AI-based scoring in provider matching accuracy?
-

1.5 SCOPE OF STUDY

The scope of this research includes AI-powered service request analysis, real-time provider matching, and system scalability using modern web technologies. Payment systems and large-scale deployment are outside the current scope.

CHAPTER # 2:

2.1 OVERVIEW

This chapter reviews existing service marketplace platforms, AI-based matching systems, and geospatial algorithms relevant to intelligent service aggregation.

2.1.1 AI-DRIVEN SERVICE MARKETPLACES

Modern platforms attempt automation but lack deep contextual understanding. AI adoption remains limited to recommendation filtering rather than semantic interpretation.

2.1.2 MULTIMODAL AI IN CONTEXT ANALYSIS

Recent advancements in Generative AI, particularly vision-enabled language models, allow systems to analyze images alongside text, enabling deeper problem understanding.

2.2 GEOSPATIAL MATCHING SYSTEMS

Geospatial algorithms such as Haversine distance calculations enable efficient provider proximity ranking, improving response efficiency.

2.3 LITERATURE ANALYSIS

The reviewed literature highlights a gap in combining multimodal AI with real-time geospatial intelligence—an area ServeFlow AI directly addresses.

CHAPTER # 3:

3.1 OVERVIEW

ServeFlow AI follows a service-oriented architecture supported by Agile development methodology to ensure modularity and scalability.

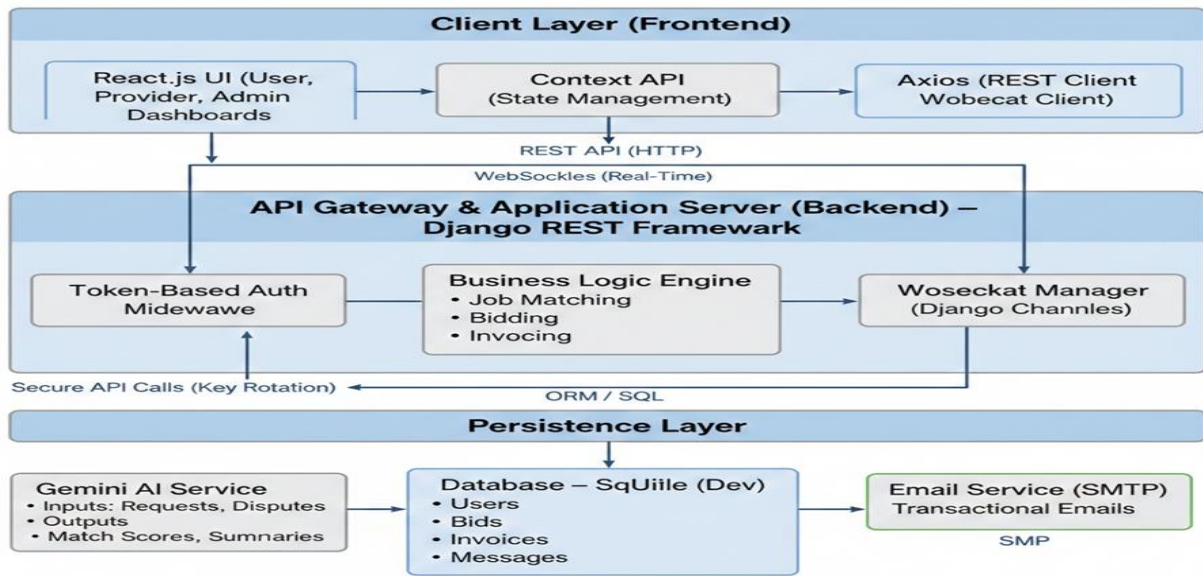
3.2 FUNCTIONAL REQUIREMENTS

- User registration and authentication
 - AI-based service request analysis
 - Provider matching and ranking
 - Real-time notifications via WebSockets
 - Job status tracking
-

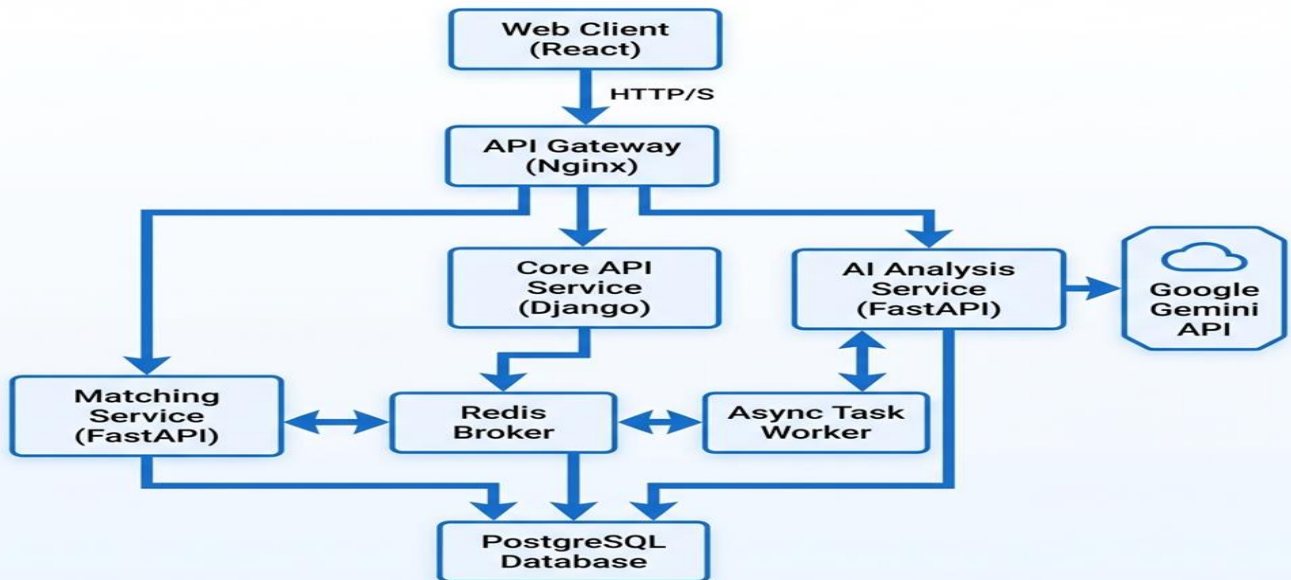
3.3 NON-FUNCTIONAL REQUIREMENTS

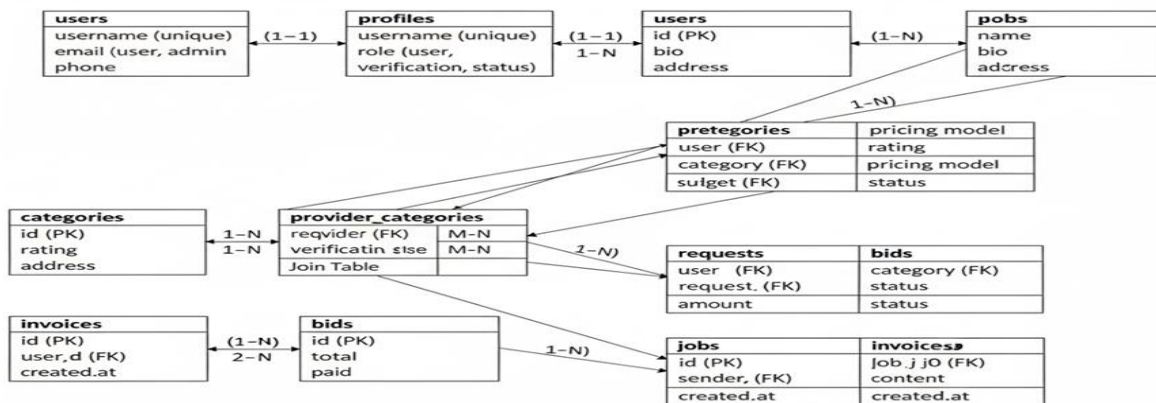
- High system availability
- Low response latency
- Secure data handling
- Scalability and fault tolerance

ANNEXURE

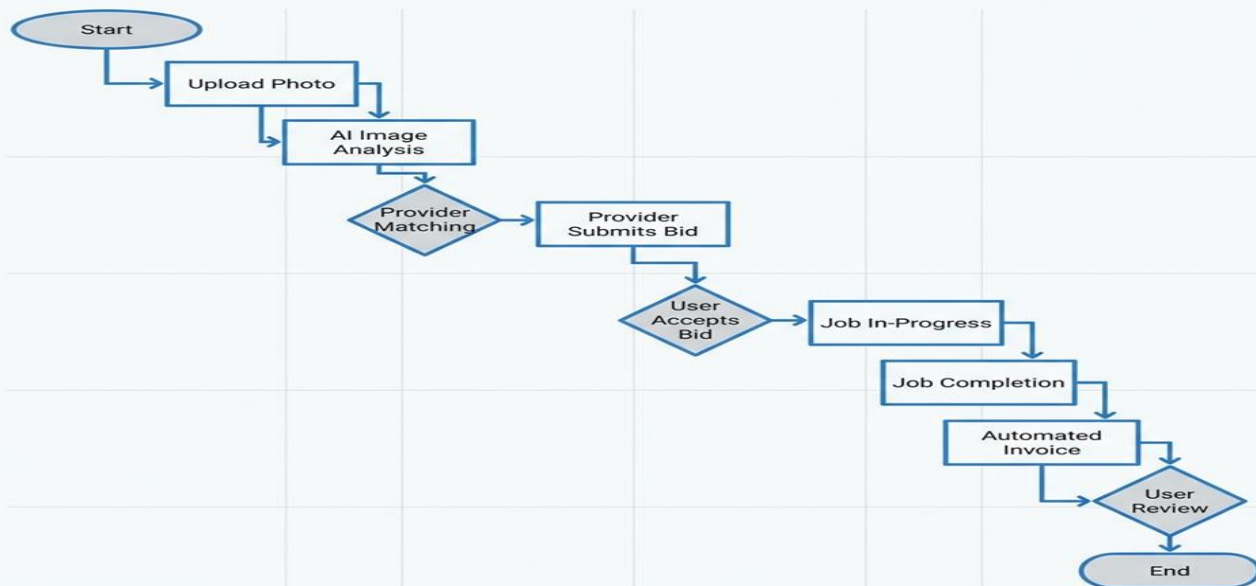


ServeFlow AI System Architecture

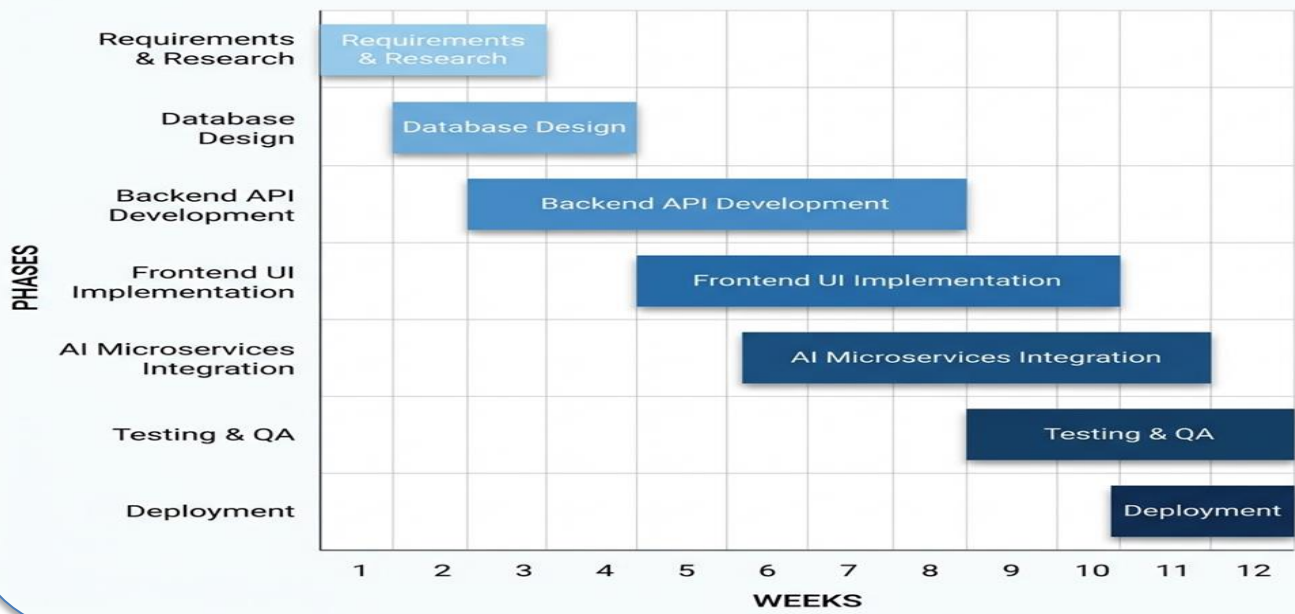




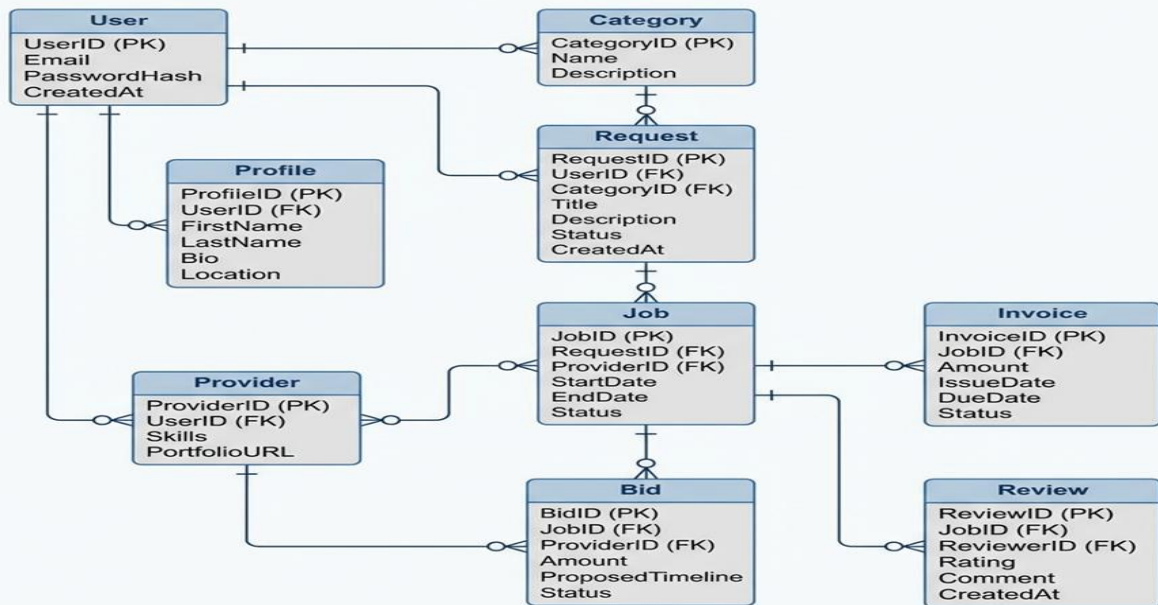
ServeFlow AI Service Request Lifecycle



ServeFlow AI Project Schedule (12 Weeks)



ServeFlow AI ERD



ServeFlow AI - Level 1 Data Flow Diagram

