

1. Major Architectural Upgrades

1.1 Production-Grade AI Intelligence Engine

Objective

Replace mock AI responses with a **real, resilient, production-capable AI system**.

Implementation

- Integrated **Google Gemini Pro Vision** using the `google-generativeai` SDK
- Backend module: `backend/api/views_ai.py`

Key Capabilities

- **Visual Analysis Pipeline**
 - `AIImageAnalysisView` accepts image uploads (base64 / multipart)
 - Sends image + prompt to Gemini Vision
 - Returns structured JSON:
 - Category
 - Technical Title
 - Description
 - Urgency Level
 - Estimated Budget
- **Multi-Key Resilience**
 - `SystemSettings` model stores **4 independent API keys**
 - Automatic rotation when encountering **429 (rate limit)** errors
- **Graceful Degradation**
 - If all AI keys fail, system falls back to a simulated response
 - Prevents request failure and preserves UX continuity

Learn / Reference

- Google Gemini Vision API (Production Usage)
<https://www.youtube.com/watch?v=8sHjP4x9pVY>
 - Designing Resilient AI Systems
<https://www.youtube.com/watch?v=5sD1kM3zQwE>
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1.2 Real-Time Event Bus (WebSocket Ecosystem)

Objective

Eliminate HTTP polling and move to a **fully event-driven architecture**.

Infrastructure

- Django Channels with **Redis** (`channels_redis`) as the channel layer
- Production-grade scalability and fan-out support

Security

- Custom `TokenAuthMiddleware` (`api/middleware_channels.py`)
- Uses **DRF token authentication** for WebSocket connections

Communication Channels

- `ws/notifications/`
 - Global user-level notifications
 - Job offers, status changes, system alerts
- `ws/chat/<job_id>/`
 - Isolated, secure Provider–Customer chat rooms

Frontend Integration

- `WebSocketContext.jsx`
 - Centralized connection handling
 - Auto-reconnect strategy
 - Global state dispatch

Learn / Reference

- Django Channels + Redis (Scalable Real-Time Systems)
<https://www.youtube.com/watch?v=R4-XXK6kHjA>
- Event-Driven Architectures Explained
<https://www.youtube.com/watch?v=STKCRSUsyP0>

1.3 Glassmorphism UI / UX Overhaul

Objective

Transform the UI from a basic prototype into a **premium, modern product experience**.

Global Design System

- Implemented in `index.css`
- Core utilities:
 - `.glass, .glass-card`
 - `backdrop-filter: blur()`
 - Semi-transparent layers & white borders

Animation System

- Custom animations:
 - **blob** — floating gradient backgrounds
 - **scale-in** — modal entrances

Component Modernization

- Landing Page:
 - 3D hero section
 - Animated feature cards
- Dashboards:
 - **Dashboard.jsx**
 - **ProviderDashboard.jsx**
 - **AdminPanel.jsx**
 - Mission-control style layouts with data density
- Navigation:
 - **PublicNavbar.jsx** with scroll-aware transparency

Learn / Reference

- Glassmorphism in Modern Web Apps
<https://www.youtube.com/watch?v=Y0pEJQ0Rk3g>
- Motion Design with Framer Motion
<https://www.youtube.com/watch?v=SuqU904ZHA4>

2. Feature Modules Delivered

2.1 “Mission Control” Provider Dashboard

File

- **frontend/src/pages/ProviderDashboard.jsx**

Core Concepts

- **Gamified job flow**
 - Jobs treated as “Missions”
 - States: Pending → Initiated → Completed
- **Live Communication**
 - Embedded **ChatInterface.jsx**
 - Floating real-time chat widget
- **Stats Engine**

- Trust Rating
- Total Revenue
- Mission Success Rate (calculated in real time)

Learn / Reference

- Dashboard UX for Operations Platforms
<https://www.youtube.com/watch?v=0m4gJ3wKZyE>
 - Finite State Machines in UI Logic
<https://www.youtube.com/watch?v=Yz4o0y7E9fY>
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2.2 Intelligent Admin Control Panel

Files

- `AdminSettings.jsx`
- `AdminCategories.jsx`

Key Features

- **Live Visual Preview**
 - Theme and color changes rendered instantly before saving
- **Service Category Management**
 - Image previews
 - Safe-service validation logic
- **AI Key Vault**
 - Secure management of multi-key AI infrastructure

Learn / Reference

- Designing Admin Panels in React
<https://www.youtube.com/watch?v=YJPSR9dEQV8>
 - Secure Configuration Management
<https://www.youtube.com/watch?v=2k8NleFjG7I>
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2.3 Visual Request Creation (AI-Assisted)

File

- `frontend/src/pages/CreateRequest.jsx`

Workflow

1. User uploads an image
2. AI analyzes the issue
3. System auto-fills:
 - Title
 - Description
 - Category
4. Backend maps AI keywords to internal category IDs

Result

- Reduced friction
- Higher-quality service requests
- Faster provider matching

Learn / Reference

- AI-Assisted Form UX
<https://www.youtube.com/watch?v=2b6d9Gv6K9M>
 - Image Upload & Processing Pipelines
<https://www.youtube.com/watch?v=VY4vJb0GzYI>
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3. Critical Bug Fixes (Recent Sprint)

Stability & UX Fixes

- Branding & SEO consistency across the app
- Auth-aware navbar logic
- Footer icon import corrections
- Admin panel save-flow repairs
- Image preview normalization
- Provider dashboard crash prevention
- Profile image uploads via `FormData`
- Notification triggers verified (`notify_request_update`)

Learn / Reference

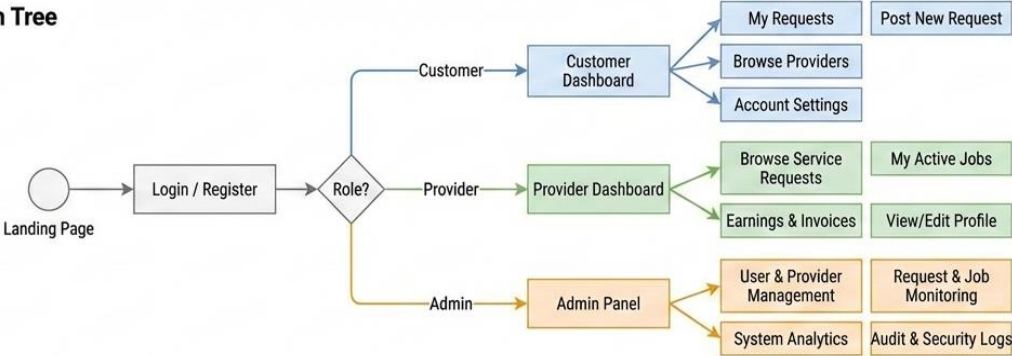
- Debugging React Applications
<https://www.youtube.com/watch?v=Q9Qb3zC1fDo>
 - Django Signals & Event Hooks
<https://www.youtube.com/watch?v=O6VvZb4RZ0g>
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5. Gap Analysis — Pending vs Planned

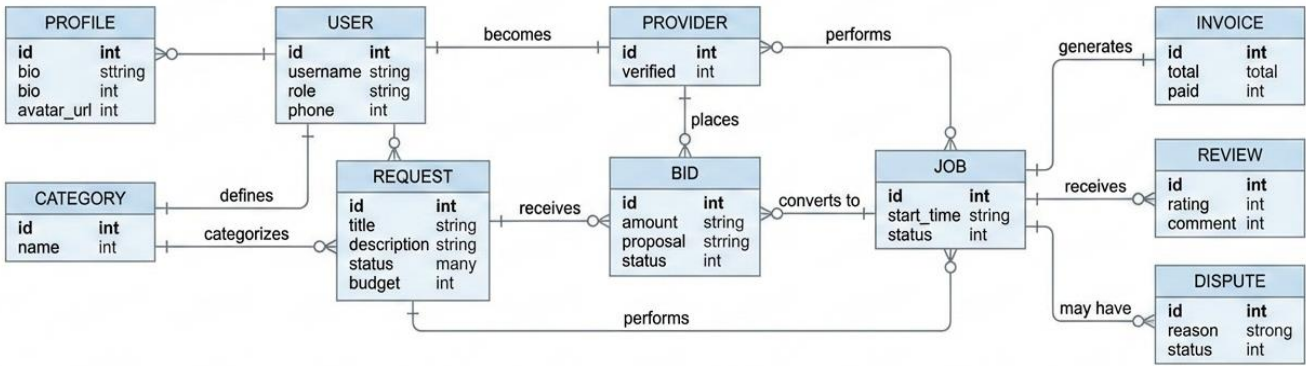
Feature	Status	Notes
Core Job Loop	Completed	End-to-end operational
Real-Time Chat	Completed	WebSocket + persistence
Visual Design	Completed	Glassmorphism applied
Payment Integration	Pending	Stripe integration for Invoices.jsx
Dockerization	Planned	Dockerfile + docker-compose

DIAGRAMS

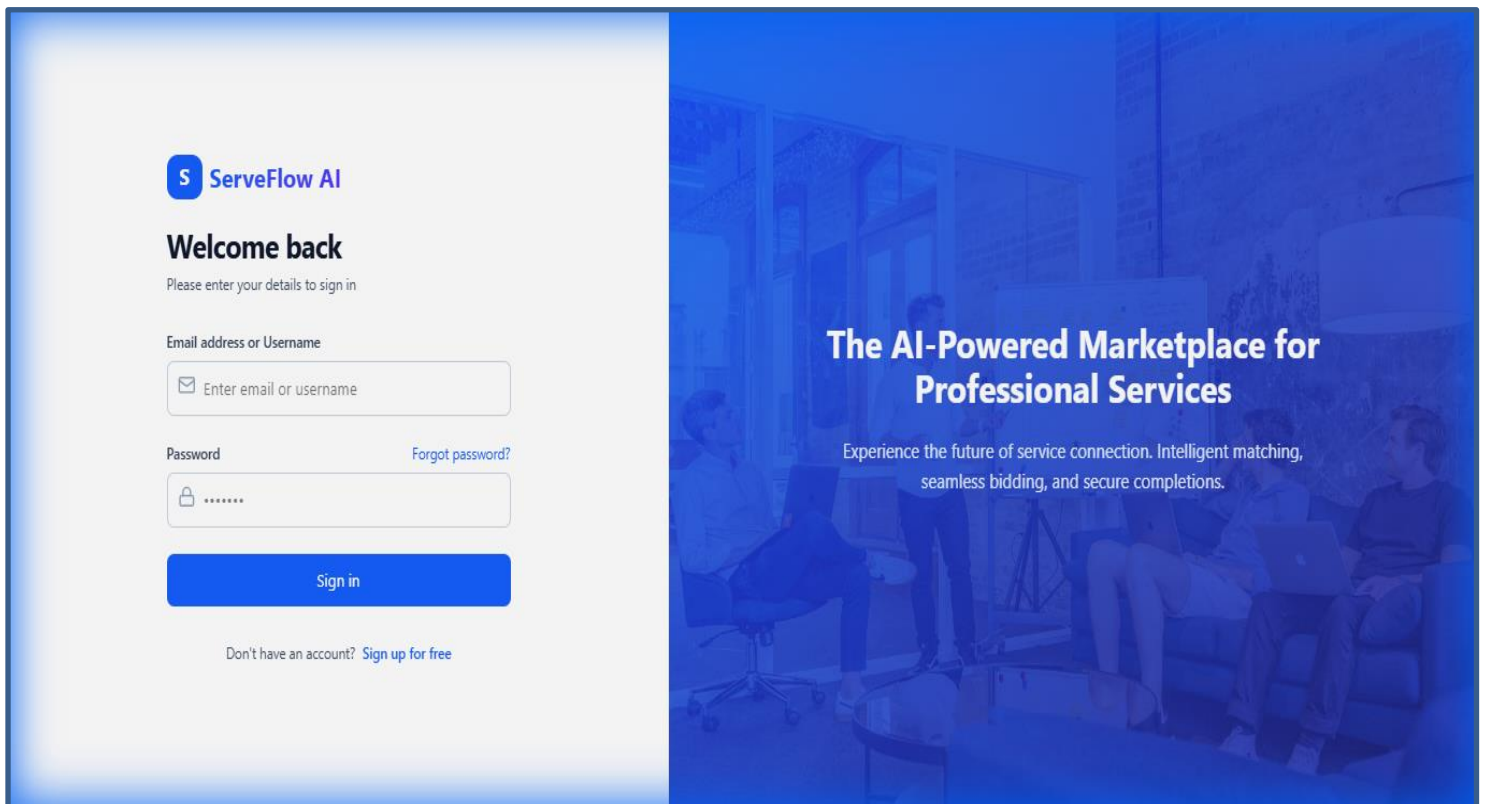
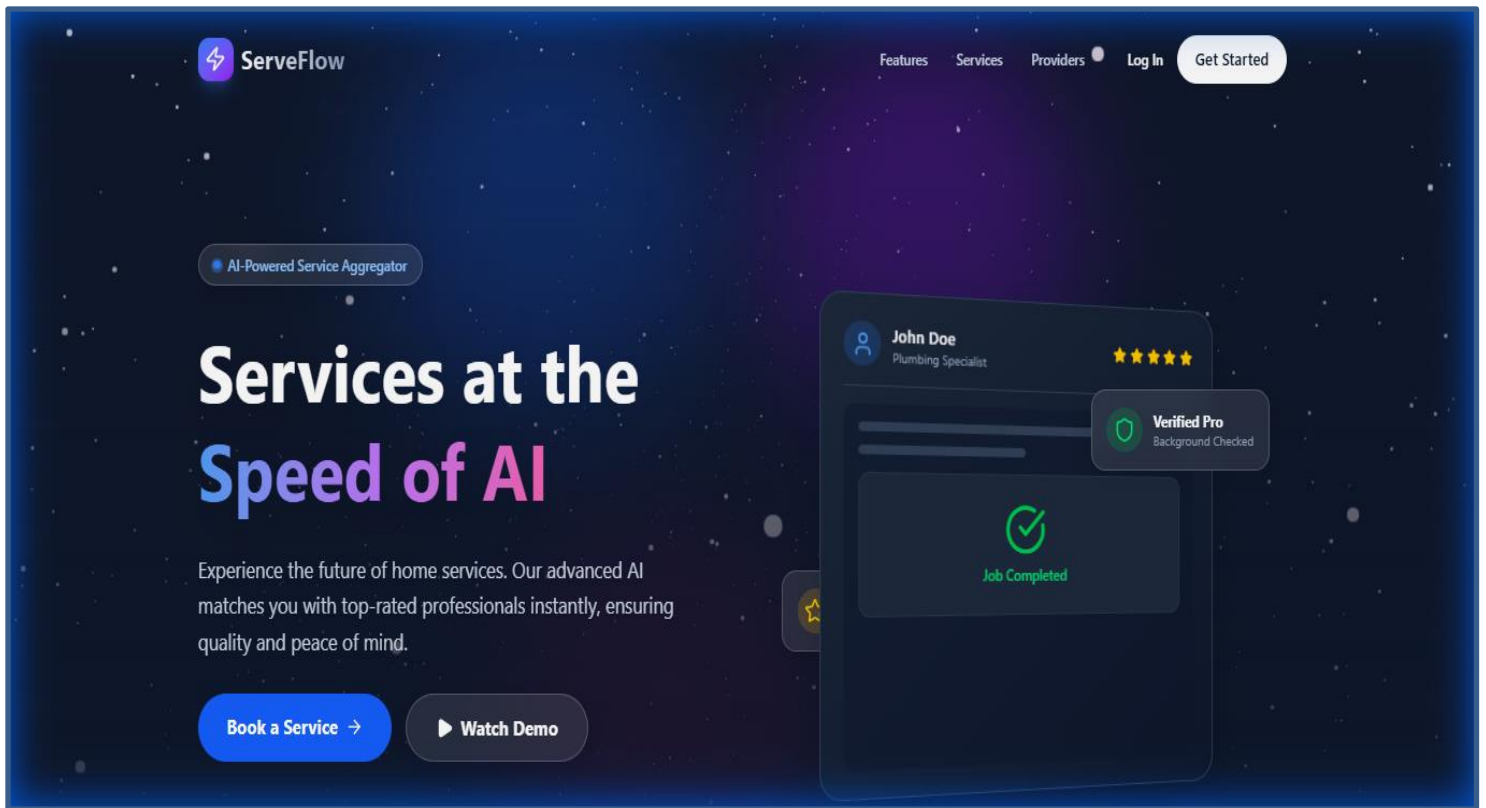
1. User Navigation Tree



2. Entity Relationship Diagram (ERD) - Prototype




SCREENSHOTS



Create Account


Join our AI-powered service platform

I want to register as:



Customer

Request services



Provider

Offer services

First Name *

Last Name *

Username *

Email *

Phone (Optional)

Password *

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ServeFlow AI

AI CORE POWERED

NAVIGATION HUB

Command Center

MANAGEMENT

Client Base

Service Force

Market Specs

SYSTEM PROTOCOLS

Live Bids

System Jobs

[-> Terminate Session

ADMIN

PROTOCOL ACTIVE

Command Center

Global infrastructure management and protocol oversight

CLIENT BASE

7

SERVICE FORCE

2

ACTIVE JOBS

8

NET REVENUE

PKR130

VERIFICATION QUEUE

0 PENDING BOTS

SYSTEM HEALTH

GLOBAL API

NOMINAL

AI DIAGNOSTICS

ACTIVE

NEW SPEC

LIVE FLOW

All entities successfully verified.

VIEW ENTIRE FORCE ARCHIVE

ServeFlow AI
AI CORE POWERED

NAVIGATION HUB

Job Center

Active Orders

System Settings

Terminate Session

PROVIDER
PROTOCOL ACTIVE

Execution Hub
Managing active missions and performance metrics

TOTAL MISSIONS
3

TOTAL REVENUE
\$810

SUCCESSFUL ENDS
2

TRUST RATING
2.50

AVAILABLE MISSIONS

ID #9
Protocol Implementation
COMPLETED
MATCH: % INITIATED: 12/31/2025

ID #7
Protocol Implementation
ACCEPTED
MATCH: % INITIATED: 12/31/2025

Provider Session
Status: Encrypted

STATUS
Online & Ready

3 POTENTIAL TASKS

ServeFlow AI
AI CORE POWERED

NAVIGATION HUB

Overview

My Requests

Schedule AI Diagnostic

Billing & Invoices

User Reviews

Profile Settings

Terminate Session

DASHBOARD
PROTOCOL ACTIVE

System Status
Monitoring your service ecosystem in real-time

TOTAL DEPLOYMENTS
5

ACTIVE PROTOCOLS
0

VALIDATED RESULTS
4

OPERATION CENTER

Initialize New Request
Launch AI-powered service diagnostics

Deployment History
Monitor active protocols and logs

Live Efficiency Metrics
System performance is currently optimal with 99.9% uptime across all active nodes.

User Session
Status: Encrypted

New Request