GlobiAI – Technical Project Report

This report explains the complete development process of GlobiAI, an AI-powered itinerary planner. The document describes the technologies used, features implemented, workflows, security systems, AI integrations, deployment process, and major achievements of the project.

Stage 1 – Backend Authentication System

Objective

The purpose of this stage was to build a secure user authentication and account management system for GlobiAI.

Features Implemented

- User signup and login system
- JWT-based authentication
- OTP email verification during signup
- Forgot password and reset password system
- Password encryption using bcryptjs
- Rate limiting for OTP requests
- Protection against unauthorized access

Technologies Used

- Node.js
- Express.js
- MongoDB Atlas
- Mongoose
- JWT Authentication
- bcryptjs
- Nodemailer
- Brevo SMTP Service

Security Features

- Passwords are encrypted before storing in the database
- Unverified users cannot log in
- JWT secrets are stored using environment variables
- Automatic cleanup of unverified accounts after 24 hours

Key Achievements

- Secure authentication flow successfully implemented
- OTP verification system integrated successfully

- Forgot password flow tested successfully
- Authentication APIs verified using Requestly API Client

Stage 2 – Travel Document Upload System

Objective

The goal of this stage was to allow users to securely upload travel-related documents and manage them efficiently.

Features Implemented

- Multiple file uploads supported
- PDF and image uploads supported
- Upload validation and file-size limits added
- Storage quota system implemented
- Authenticated access control for uploads
- File deletion synchronization implemented

Technologies Used

- Supabase Storage
- Multer
- MongoDB Atlas
- Mongoose
- Express.js

Supported File Types

- PDF
- JPEG
- PNG
- WEBP

Key Achievements

- Secure file upload system implemented
- Automatic storage tracking completed
- Users can manage only their own uploads
- Upload and deletion APIs tested successfully

Stage 3 – AI Document Parsing & Structured Data Pipeline

Objective

The aim of this stage was to automatically extract meaningful travel information from uploaded travel documents using AI and OCR technologies.

Features Implemented

- Automatic document parsing after upload
- OCR support for scanned documents
- AI-based structured data extraction
- Automatic travel category detection
- Background asynchronous parsing system
- Error handling and recovery system

Technologies Used

- pdf-parse
- tesseract.js
- Google Gemini 2.5 Flash
- @google/genai SDK
- MongoDB Atlas
- Mongoose

Extracted Information

- Airline and train details
- Departure and arrival locations
- Hotel information
- Booking dates
- Seat numbers
- Visa details

Key Achievements

- OCR fallback system implemented successfully
- Scanned PDFs supported successfully
- Structured JSON generation completed
- Parsing pipeline tested with multiple travel documents

Stage 4 – AI Itinerary Generation System

Objective

The purpose of this stage was to generate intelligent travel itineraries automatically using AI.

Features Implemented

- AI-powered itinerary generation
- Day-wise travel planning
- Sightseeing and food recommendations
- Hotel and transport suggestions
- Trip summary generation

- Structured JSON itinerary storage

Technologies Used

- Google Gemini 2.5 Flash
- MongoDB Atlas
- Mongoose
- Express.js

AI Capabilities

- Understands travel flow
- Detects destinations and stay duration
- Combines multiple travel documents
- Generates frontend-friendly itinerary data

Key Achievements

- Complete AI itinerary generation pipeline implemented
- Multi-user access protection verified
- Itineraries stored permanently in MongoDB
- Generation APIs tested successfully

Stage 5 – Public Itinerary Sharing System

Objective

The goal of this stage was to allow users to share itineraries securely using public links without exposing private information.

Features Implemented

- Users can generate public share links
- Read-only itinerary access added
- Sensitive user data hidden
- Copy-to-clipboard sharing implemented

Technologies Used

- NanoID
- Next.js Dynamic Routes
- MongoDB Atlas

Key Achievements

- Secure sharing system completed
- Public itinerary pages implemented
- Clean sharing interface designed

Stage 6 – Interactive Dashboard & Workspace Design

Objective

The objective of this stage was to create a modern and responsive dashboard for managing travel plans.

Features Implemented

- Sticky sidebar navigation
- Interactive timeline cards
- Drag-and-drop uploads
- Smooth animations
- Responsive design

Technologies Used

- Next.js
- Tailwind CSS
- Framer Motion
- React Dropzone

Key Achievements

- Modern SaaS-style dashboard created
- Improved user experience
- Fully responsive interface completed

Stage 7 – Voyage Quota & Timer System

Objective

The goal of this stage was to limit excessive itinerary generation requests and reduce API usage.

Features Implemented

- 5 itinerary generations per 24 hours
- Live countdown timer
- Quota-based upload blocking
- User notifications

Technologies Used

- MongoDB Aggregation
- React Hooks
- Backend Validation

Key Achievements

- API usage optimized
- Backend protected from excessive requests
- Improved quota management system

Stage 8 – Professional Email System

Objective

The purpose of this stage was to improve the OTP verification email experience for users.

Features Implemented

- Responsive HTML email templates
- OTP verification emails
- One-click OTP copying
- Mobile-friendly email layout

Technologies Used

- Brevo SMTP
- Nodemailer
- Responsive HTML & CSS

Key Achievements

- Professional email UI implemented
- Improved verification experience
- Modern branded email design created

Stage 9 – Production Deployment & Cold Start Optimization

Objective

The aim of this stage was to deploy the application online and solve backend cold-start issues.

Features Implemented

- Frontend deployed on Vercel
- Backend deployed on Render
- Automatic backend wake-up system
- Loading overlay for cold starts
- Keep-alive ping system

Technologies Used

- Vercel

- Render
- Cron Job Services
- MongoDB Atlas

Key Achievements

- Production deployment completed
- Cold-start delays reduced
- Stable frontend-backend communication established

Conclusion

GlobiAI successfully combines artificial intelligence, OCR technologies, secure authentication systems, cloud storage, and modern frontend development to create a complete AI-powered itinerary planning platform. The project demonstrates practical implementation of full-stack development, AI integration, cloud deployment, security systems, and responsive user experience design.