

Ride Sharing Application Development Plan

1. Project Overview

Objective: Develop a ride-sharing application with features for customers, drivers, and admins, leveraging AI and modern technologies to offer an innovative, user-friendly, and scalable solution.

Target Platform: Web and Mobile (React Native with Expo)

Technologies:

- Backend: Python 3.11, Flask or FastAPI
- Frontend: React Native (for mobile and web) using Expo
- AI Integration: Azure Open AI, Langchain, LlamaIndex
- Database: Vector Database (for AI-driven features), PostgreSQL (for relational data)
- Cloud Platform: Azure for deployment and services
- UI Framework: Streamlit for admin dashboards, React Native for the mobile app
- Version Control: Git (with GitHub or GitLab)
- IDE: VSCode

2. Project Features

1. Functionality and Completeness:

- Customer Interface:
 - Sign Up / Log In
 - Book a Ride (Select Pickup and Drop-off locations)
 - View Nearby Drivers
 - Track Ride in Real-Time
 - Payment Integration (Card, Wallet)
 - Ride History

- Rate and Review Drivers
- Driver Interface:
 - Sign Up / Log In
 - Accept/Reject Rides
 - Navigation Assistance (via integration with maps API)
 - Earnings Dashboard
 - Rate and Review Passengers
- Admin Interface:
 - Manage Users (Customers/Drivers)
 - Monitor Rides
 - Analytics Dashboard (with AI-driven insights)
 - Manage Payments and Disputes

2. User Interface and User Experience:

- Login/Signup Page: Simple and intuitive with social media login options.
- Home Screen (Customer): Map-based interface showing current location and nearby drivers, search bar for destination entry, and ride booking button.
- Home Screen (Driver): Dashboard with available rides, earnings summary, and profile settings.
- Admin Dashboard: Streamlit-based interface with tabs for user management, ride monitoring, analytics, and settings.

3. Innovation and Creativity:

- AI-Powered Recommendations: Use Langchain and LlamaIndex to provide personalized ride suggestions, estimated time of arrival (ETA) predictions, and fare estimates.
- Chatbot for Assistance: Integrate a chatbot using Hugging Face models to assist users with booking rides, answering FAQs, and providing support.

- Real-time Fraud Detection: AI-driven monitoring to detect fraudulent activities, such as fake accounts or ride manipulations.

- Dynamic Pricing: AI-driven dynamic pricing model to adjust ride fares based on demand and supply, similar to surge pricing.

4. Gen AI Utilization:

- Ride Matching Algorithm: Use vector databases and AI to match riders with drivers more efficiently, considering factors like proximity, driver ratings, and ride preferences.

- Sentiment Analysis: Analyze user reviews and feedback to improve service quality.

- Predictive Analytics: Predict peak hours and high-demand areas, allowing drivers to position themselves accordingly.

3. Project Workflow

1. Design Phase:

- Create wireframes for each user interface (Customer, Driver, Admin).

- Define the database schema, focusing on relational tables and vector embeddings for AI features.

- Set up the cloud infrastructure on Azure.

2. Development Phase:

- Frontend Development:

- Implement the React Native interface for customers and drivers.

- Develop the Streamlit dashboard for admins.

- Backend Development:

- Set up the API using Flask or FastAPI.

- Integrate AI models and services (Langchain, LlamaIndex, Hugging Face).

- Implement payment gateway and ride-tracking features.
- AI Integration:
 - Train and fine-tune models for recommendation, prediction, and sentiment analysis.
 - Integrate the chatbot for user support.
 - Implement fraud detection mechanisms.
- Testing: Perform unit tests, integration tests, and user acceptance testing (UAT).

3. Deployment Phase:

- Deploy the application to Azure, ensuring scalability and security.
- Set up continuous integration and continuous deployment (CI/CD) pipelines.

4. Post-Deployment:

- Monitor the application performance using Azure Monitoring tools.
- Collect user feedback and iterate on features.

4. Login Types and User Flow

- Login Types:
 - Customer Login: Access to ride booking, ride history, and payment options.
 - Driver Login: Access to available rides, earnings dashboard, and driver profile.
 - Admin Login: Access to user management, ride monitoring, and analytics.
- User Flow:
 - Initial Screen: Login page with options for customers, drivers, and admins.
 - After Login (Customer): Redirect to the home screen with a map and ride options.
 - After Login (Driver): Redirect to the driver dashboard with available rides.
 - After Login (Admin): Redirect to the admin dashboard with management tools.

Console Output Details:-

Requirement already satisfied: pillow<11,>=7.1.0 in

c:\users\saisi\appdata\local\packages\pythonsoftwarefoundation.python.3.11_qbz5n2kfr
a8p0\localcache\local-packages\python311\site-packages (from streamlit) (10.2.0)

Requirement already satisfied: protobuf<6,>=3.20 in

c:\users\saisi\appdata\local\packages\pythonsoftwarefoundation.python.3.11_qbz5n2kfr
a8p0\localcache\local-packages\python311\site-packages (from streamlit) (4.25.3)

Collecting pyarrow>=7.0 (from streamlit)

Using cached pyarrow-17.0.0-cp311-cp311-win_amd64.whl.metadata (3.4 kB)

Requirement already satisfied: requests<3,>=2.27 in

c:\users\saisi\appdata\local\packages\pythonsoftwarefoundation.python.3.11_qbz5n2kfr
a8p0\localcache\local-packages\python311\site-packages (from streamlit) (2.31.0)

Requirement already satisfied: rich<14,>=10.14.0 in

c:\users\saisi\appdata\local\packages\pythonsoftwarefoundation.python.3.11_qbz5n2kfr
a8p0\localcache\local-packages\python311\site-packages (from streamlit) (13.7.1)

Collecting tenacity<9,>=8.1.0 (from streamlit)

Using cached tenacity-8.5.0-py3-none-any.whl.metadata (1.2 kB)

Collecting toml<2,>=0.10.1 (from streamlit)

Using cached toml-0.10.2-py2.py3-none-any.whl.metadata (7.1 kB)

Requirement already satisfied: typing-extensions<5,>=4.3.0 in

c:\users\saisi\appdata\local\packages\pythonsoftwarefoundation.python.3.11_qbz5n2kfr
a8p0\localcache\local-packages\python311\site-packages (from streamlit) (4.10.0)

Collecting gitpython!=3.1.19,<4,>=3.0.7 (from streamlit)

Using cached GitPython-3.1.43-py3-none-any.whl.metadata (13 kB)

Collecting pydeck<1,>=0.8.0b4 (from streamlit)

Using cached pydeck-0.9.1-py2.py3-none-any.whl.metadata (4.1 kB)

Collecting tornado<7,>=6.0.3 (from streamlit)

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Collecting watchdog<5,>=2.1.5 (from streamlit)

Using cached watchdog-4.0.2-py3-none-win_amd64.whl.metadata (38 kB)

Collecting jinja2 (from altair<6,>=4.0->streamlit)

Using cached jinja2-3.1.4-py3-none-any.whl.metadata (2.6 kB)

Collecting jsonschema>=3.0 (from altair<6,>=4.0->streamlit)

Using cached jsonschema-4.23.0-py3-none-any.whl.metadata (7.9 kB)

Collecting narwhals>=1.1.0 (from altair<6,>=4.0->streamlit)

Using cached narwhals-1.4.2-py3-none-any.whl.metadata (5.5 kB)

Collecting colorama (from click<9,>=7.0->streamlit)

Using cached colorama-0.4.6-py2.py3-none-any.whl.metadata (17 kB)

Collecting gitdb<5,>=4.0.1 (from gitpython!=3.1.19,<4,>=3.0.7->streamlit)

Using cached gitdb-4.0.11-py3-none-any.whl.metadata (1.2 kB)

Requirement already satisfied: python-dateutil>=2.8.2 in

c:\users\saisi\appdata\local\packages\pythonsoftwarefoundation.python.3.11_qbz5n2kfr
a8p0\localcache\local-packages\python311\site-packages (from pandas<3,>=1.3.0-
>streamlit) (2.9.0.post0)

Requirement already satisfied: pytz>=2020.1 in

c:\users\saisi\appdata\local\packages\pythonsoftwarefoundation.python.3.11_qbz5n2kfr

a8p0\localcache\local-packages\python311\site-packages (from pandas<3,>=1.3.0->streamlit) (2024.1)
Requirement already satisfied: tzdata>=2022.7 in
c:\users\saisi\appdata\local\packages\pythonsoftwarefoundation.python.3.11_qbz5n2kfr
a8p0\localcache\local-packages\python311\site-packages (from pandas<3,>=1.3.0->streamlit) (2024.1)
Requirement already satisfied: charset-normalizer<4,>=2 in
c:\users\saisi\appdata\local\packages\pythonsoftwarefoundation.python.3.11_qbz5n2kfr
a8p0\localcache\local-packages\python311\site-packages (from requests<3,>=2.27->streamlit) (3.3.2)
Requirement already satisfied: idna<4,>=2.5 in
c:\users\saisi\appdata\local\packages\pythonsoftwarefoundation.python.3.11_qbz5n2kfr
a8p0\localcache\local-packages\python311\site-packages (from requests<3,>=2.27->streamlit) (3.6)
Requirement already satisfied: urllib3<3,>=1.21.1 in
c:\users\saisi\appdata\local\packages\pythonsoftwarefoundation.python.3.11_qbz5n2kfr
a8p0\localcache\local-packages\python311\site-packages (from requests<3,>=2.27->streamlit) (2.2.1)
Requirement already satisfied: certifi>=2017.4.17 in
c:\users\saisi\appdata\local\packages\pythonsoftwarefoundation.python.3.11_qbz5n2kfr
a8p0\localcache\local-packages\python311\site-packages (from requests<3,>=2.27->streamlit) (2024.2.2)
Requirement already satisfied: markdown-it-py>=2.2.0 in
c:\users\saisi\appdata\local\packages\pythonsoftwarefoundation.python.3.11_qbz5n2kfr
a8p0\localcache\local-packages\python311\site-packages (from rich<14,>=10.14.0->streamlit) (3.0.0)
Requirement already satisfied: pygments<3.0.0,>=2.13.0 in
c:\users\saisi\appdata\local\packages\pythonsoftwarefoundation.python.3.11_qbz5n2kfr
a8p0\localcache\local-packages\python311\site-packages (from rich<14,>=10.14.0->streamlit) (2.17.2)
Collecting smmap<6,>=3.0.1 (from gitdb<5,>=4.0.1->gitpython!=3.1.19,<4,>=3.0.7->streamlit)
Using cached smmap-5.0.1-py3-none-any.whl.metadata (4.3 kB)
Requirement already satisfied: MarkupSafe>=2.0 in
c:\users\saisi\appdata\local\packages\pythonsoftwarefoundation.python.3.11_qbz5n2kfr
a8p0\localcache\local-packages\python311\site-packages (from jinja2->altair<6,>=4.0->streamlit) (2.1.5)
Collecting attrs>=22.2.0 (from jsonschema>=3.0->altair<6,>=4.0->streamlit)
Using cached attrs-24.2.0-py3-none-any.whl.metadata (11 kB)
Collecting jsonschema-specifications>=2023.03.6 (from jsonschema>=3.0->altair<6,>=4.0->streamlit)
Using cached jsonschema_specifications-2023.12.1-py3-none-any.whl.metadata (3.0 kB)
Collecting referencing>=0.28.4 (from jsonschema>=3.0->altair<6,>=4.0->streamlit)
Using cached referencing-0.35.1-py3-none-any.whl.metadata (2.8 kB)
Collecting rpds-py>=0.7.1 (from jsonschema>=3.0->altair<6,>=4.0->streamlit)
Using cached rpds_py-0.20.0-cp311-none-win_amd64.whl.metadata (4.2 kB)

Requirement already satisfied: mdurl~=0.1 in

c:\users\saisi\appdata\local\packages\pythonsoftwarefoundation.python.3.11_qbz5n2kfra8p0\localcache\local-packages\python311\site-packages (from markdown-it-py>=2.2.0->rich<14,>=10.14.0->streamlit) (0.1.2)

Requirement already satisfied: six>=1.5 in

c:\users\saisi\appdata\local\packages\pythonsoftwarefoundation.python.3.11_qbz5n2kfra8p0\localcache\local-packages\python311\site-packages (from python-dateutil>=2.8.2->pandas<3,>=1.3.0->streamlit) (1.16.0)

Using cached streamlit-1.37.1-py2.py3-none-any.whl (8.7 MB)

Using cached altair-5.4.0-py3-none-any.whl (671 kB)

Using cached blinker-1.8.2-py3-none-any.whl (9.5 kB)

Using cached cachetools-5.5.0-py3-none-any.whl (9.5 kB)

Using cached click-8.1.7-py3-none-any.whl (97 kB)

Using cached GitPython-3.1.43-py3-none-any.whl (207 kB)

Using cached pyarrow-17.0.0-cp311-cp311-win_amd64.whl (25.2 MB)

Using cached pydeck-0.9.1-py2.py3-none-any.whl (6.9 MB)

Using cached tenacity-8.5.0-py3-none-any.whl (28 kB)

Using cached toml-0.10.2-py2.py3-none-any.whl (16 kB)

Using cached tornado-6.4.1-cp38-abi3-win_amd64.whl (438 kB)

Using cached watchdog-4.0.2-py3-none-win_amd64.whl (82 kB)

Using cached gitdb-4.0.11-py3-none-any.whl (62 kB)

Using cached jinja2-3.1.4-py3-none-any.whl (133 kB)

Using cached jsonschema-4.23.0-py3-none-any.whl (88 kB)

Using cached narwhals-1.4.2-py3-none-any.whl (144 kB)

Using cached colorama-0.4.6-py2.py3-none-any.whl (25 kB)

Using cached attrs-24.2.0-py3-none-any.whl (63 kB)

Using cached jsonschema_specifications-2023.12.1-py3-none-any.whl (18 kB)

Using cached referencing-0.35.1-py3-none-any.whl (26 kB)

Using cached rpds_py-0.20.0-cp311-none-win_amd64.whl (213 kB)

Using cached smmap-5.0.1-py3-none-any.whl (24 kB)

Installing collected packages: watchdog, tornado, toml, tenacity, smmap, rpds-py, pyarrow, narwhals, jinja2, colorama, cachetools, blinker, attrs, referencing, pydeck, gitdb, click, jsonschema-specifications, gitpython, jsonschema, altair, streamlit

WARNING: The script watchmedo.exe is installed in

'C:\Users\saisi\AppData\Local\Packages\PythonSoftwareFoundation.Python.3.11_qbz5n2kfra8p0\LocalCache\local-packages\Python311\Scripts' which is not on PATH.

Consider adding this directory to PATH or, if you prefer to suppress this warning, use -no-warn-script-location.

WARNING: The script jsonschema.exe is installed in

'C:\Users\saisi\AppData\Local\Packages\PythonSoftwareFoundation.Python.3.11_qbz5n2kfra8p0\LocalCache\local-packages\Python311\Scripts' which is not on PATH.

Consider adding this directory to PATH or, if you prefer to suppress this warning, use -no-warn-script-location.

WARNING: The script streamlit.exe is installed in

'C:\Users\saisi\AppData\Local\Packages\PythonSoftwareFoundation.Python.3.11_qbz5n2kfra8p0\LocalCache\local-packages\Python311\Scripts' which is not on PATH.

Consider adding this directory to PATH or, if you prefer to suppress this warning, use -

-no-warn-script-location.

Successfully installed altair-5.4.0 attrs-24.2.0 blinker-1.8.2 cachetools-5.5.0 click-8.1.7 colorama-0.4.6 gitdb-4.0.11 gitpython-3.1.43 jinja2-3.1.4 jsonschema-4.23.0 jsonschema-specifications-2023.12.1 narwhals-1.4.2 pyarrow-17.0.0 pydeck-0.9.1 referencing-0.35.1 rpds-py-0.20.0 smmap-5.0.1 streamlit-1.37.1 tenacity-8.5.0 toml-0.10.2 tornado-6.4.1 watchdog-4.0.2

[notice] A new release of pip is available: 24.0 -> 24.2

[notice] To update, run:

C:\Users\saisi\AppData\Local\Microsoft\WindowsApps\PythonSoftwareFoundation.Python.3.11_qbz5n2kfra8p0\python.exe -m pip install --upgrade pip

PS C:\Users\saisi\Desktop\vscode_project\ride-sharing-app>

* History restored

PS C:\Users\saisi\Desktop\vscode_project> ls

Directory: C:\Users\saisi\Desktop\vscode_project

Mode	LastWriteTime	Length	Name
d-----	19-08-2024 21:52		ride-sharing-app

PS C:\Users\saisi\Desktop\vscode_project>

Architecture diagram:-

