

## ABSTRACT

**Tide Times** is a cutting-edge iOS application designed to deliver **accurate** and **real-time tide predictions** along with essential **coastal information**. Built using **Swift** for a smooth and responsive **iOS frontend**, **Python** for powerful **backend data processing** and **AI-driven forecasting**, and **HTML** for seamless **web integration**, Tide Times offers a **user-friendly** yet **feature-rich** experience.

## OBJECTIVES

- 1. Provide Accurate Tide Predictions:**
- 2. Enhance User Experience:**
- 3. Integrate AI for Smart Forecasting:**
- 4. Offer Cross-Platform Connectivity:**
- 5. Support Coastal Safety and Planning:**
- 6. Maintain Lightweight and Fast Performance:**
- 7. Continuous Learning and Updates:**

## METHODS

- **User Interaction through SwiftUI Frontend**
- **Backend Request Handling with Python Service**
- **Live Data Retrieval from External APIs**
- **Data Cleaning and Preprocessing**
- **Optional AI Model Integration for Prediction**
- **Tide Predictions Generation**
- **Response Handling in SwiftUI App**
- **Final Display of Results to User**

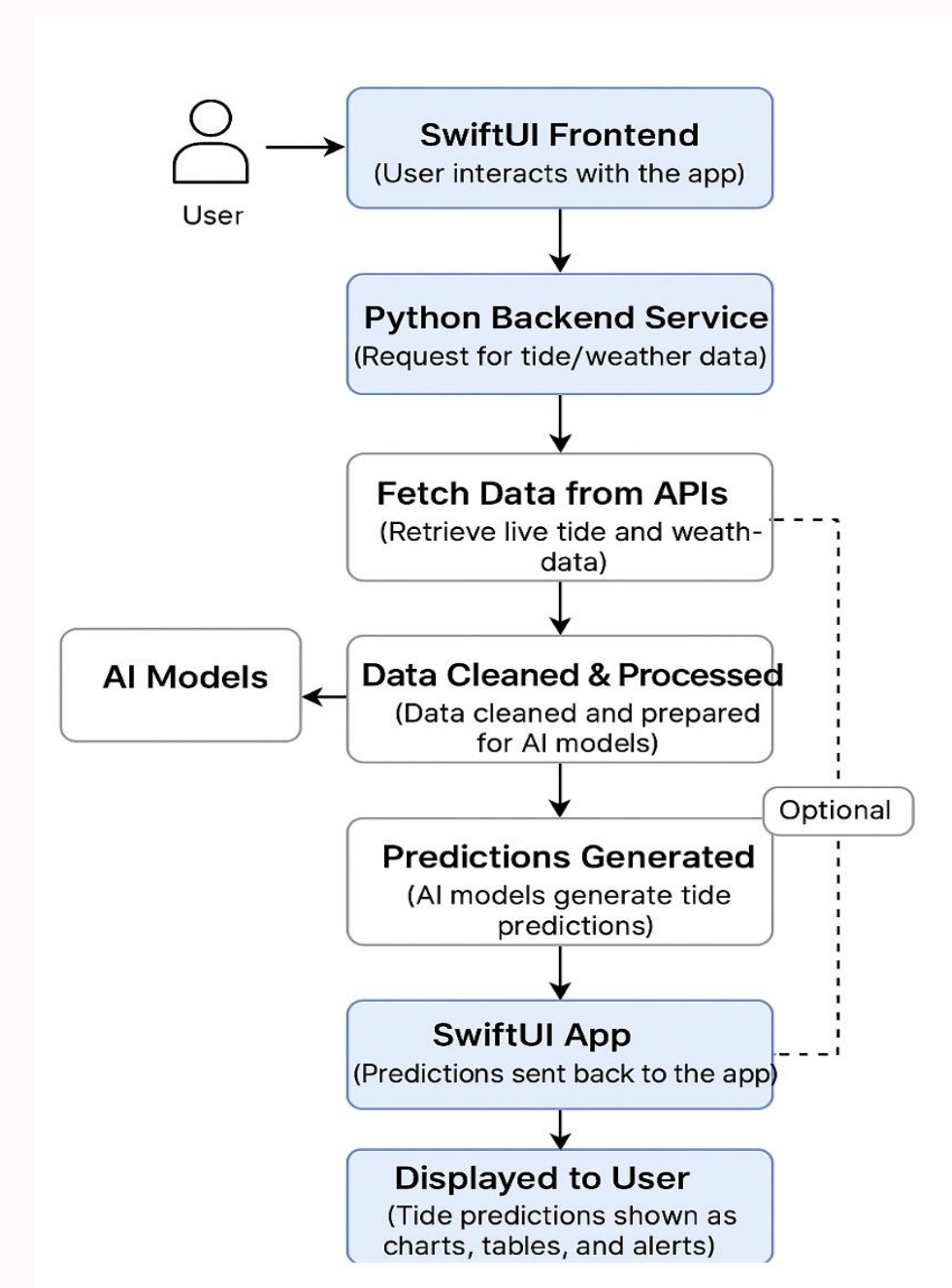
## FLOWCHART

- 1. User → SwiftUI Frontend**  
(User interacts with the app)
- 2. SwiftUI Frontend → Python Backend Service**  
(Request for tide/weather data)
- 3. Python Backend Service → Fetch Data from APIs**  
(Retrieve live tide and weather data)
- 4. Data Cleaned & Processed**  
(Data cleaned and prepared for AI models)
- 5. AI Models → Predictions Generated**  
(AI models generate tide predictions)
- 6. Predictions → SwiftUI App**  
(Predictions sent back to the app)
- 7. Displayed to User**  
(Tide predictions shown as charts, tables, and alerts)
- 8. Optional → Store Data in Local Cache**  
(Cache data for offline use or faster access)

## KEY FEATURES

- **Real-Time Tide Predictions**
- **Interactive Coastal Maps.**
- **Custom Location Profiles**
- **Data Visualizations & Analytics.**

## ARCHITECTURE DIAGRAM



## REFERENCES

- Data Sources: WorldTides™**
- **Real-Time & Accurate Data:** WorldTides™ delivers **real-time tide**
  - **Open Access:** The data is publicly available through APIs and online tools, allowing for easy integration into apps like **Tide Times**.

## ANALYSIS

Through rigorous testing and validation, Tidetimests demonstrates high reliability and accuracy in tide forecasting. The modular architecture allows for easy updates, scalability, and future integration of additional features such as wave predictions or environmental alerts. Overall, Tidetimests stands as a practical and innovative tool for promoting safer and smarter coastal activity planning.

## OUTPUT

