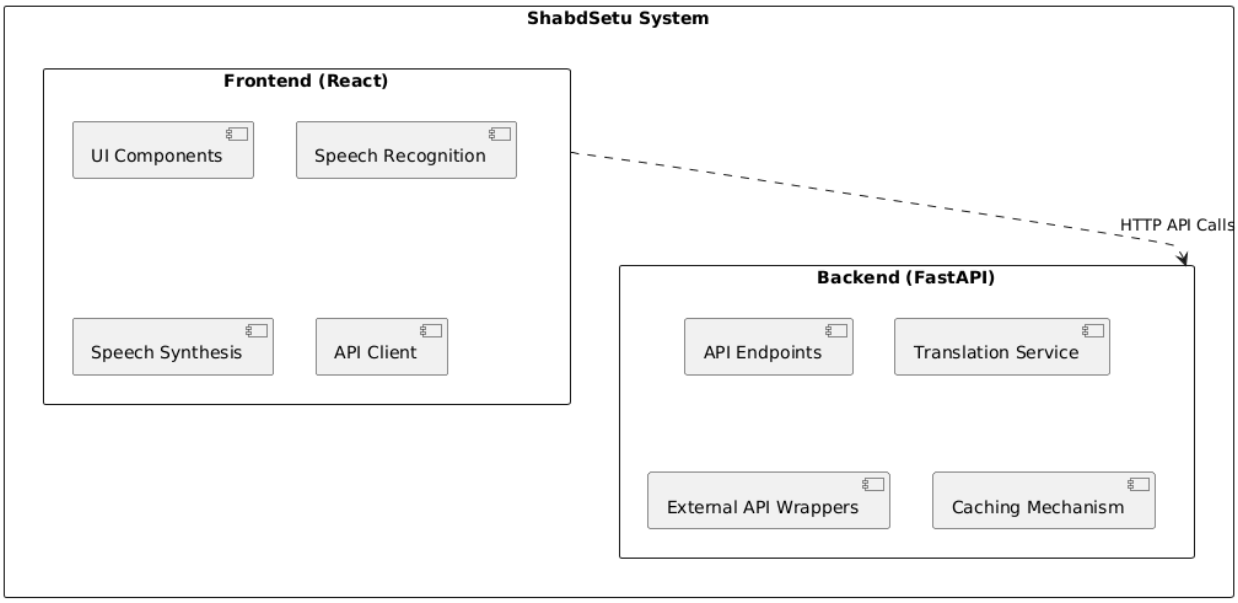
ShabdSetu System Design Report

UML Architectural Diagrams

Date: November 04, 2025

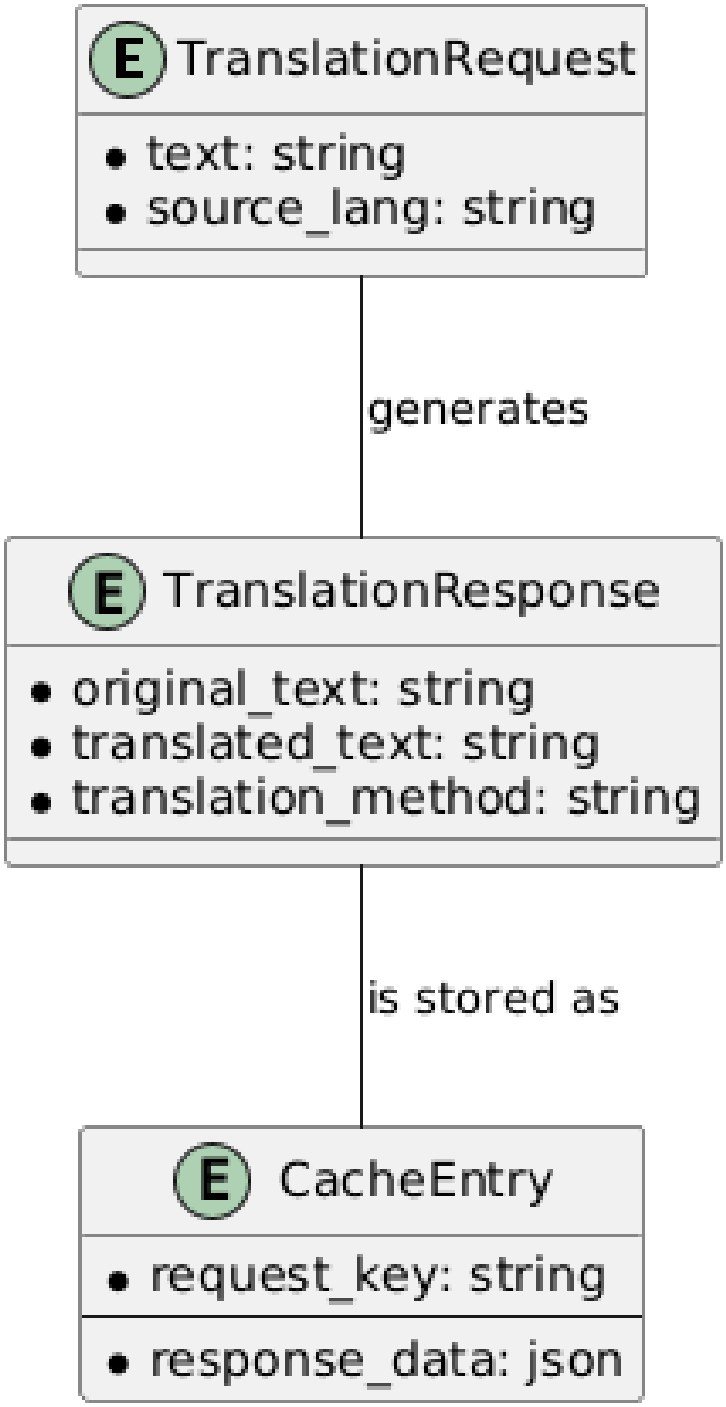
1. Module Hierarchy Diagram

This Component diagram illustrates the high-level structure of ShabdSetu, breaking it down into its primary mod
It shows the separation of concerns between the Frontend (user interface) and the Backend (translation logic).



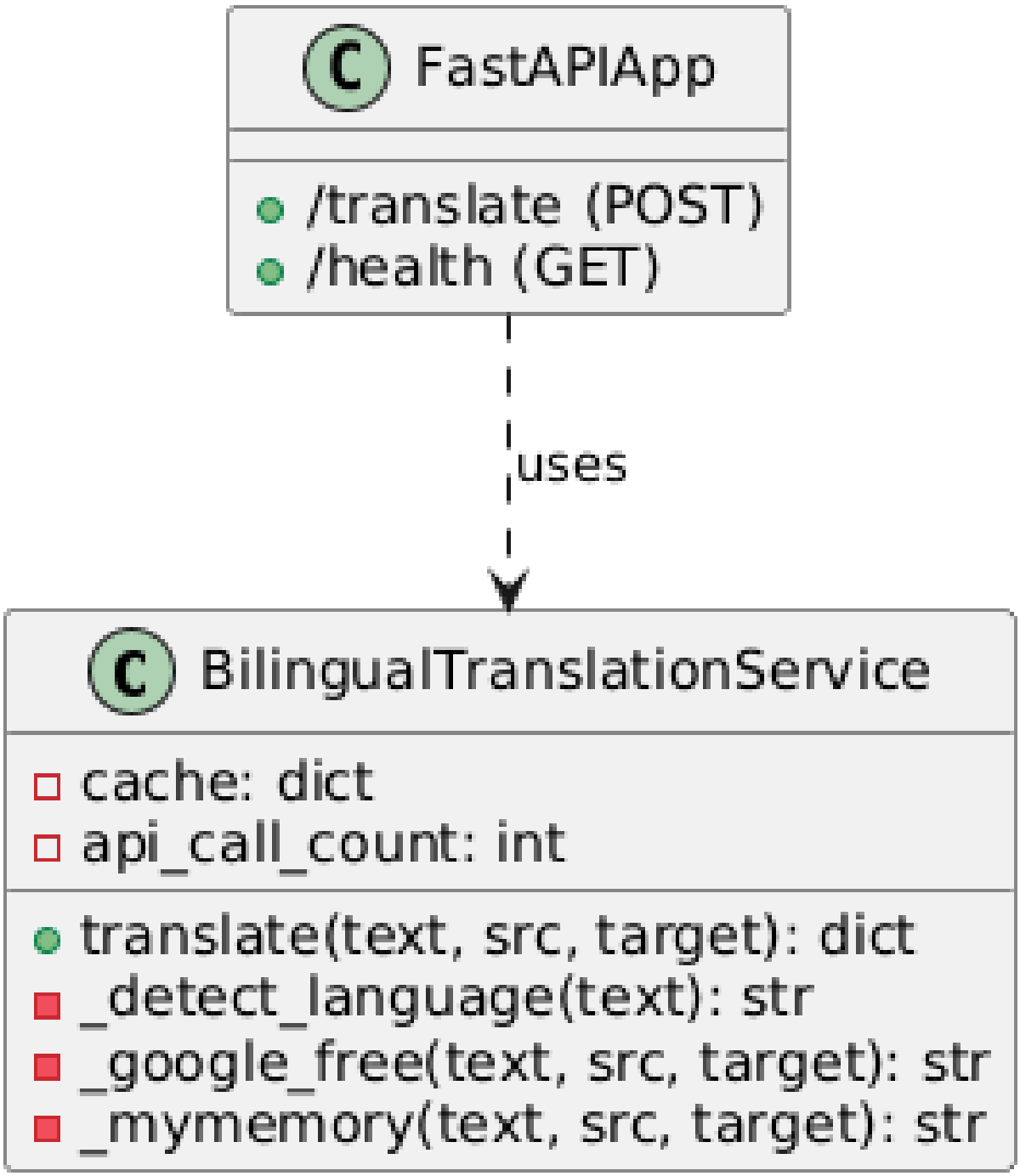
2. Entity-Relationship Diagram

This conceptual E-R diagram models the key data entities in ShabdSetu. As the application is stateless and does
persistent database, these entities represent transient data objects created during the translation workflow.



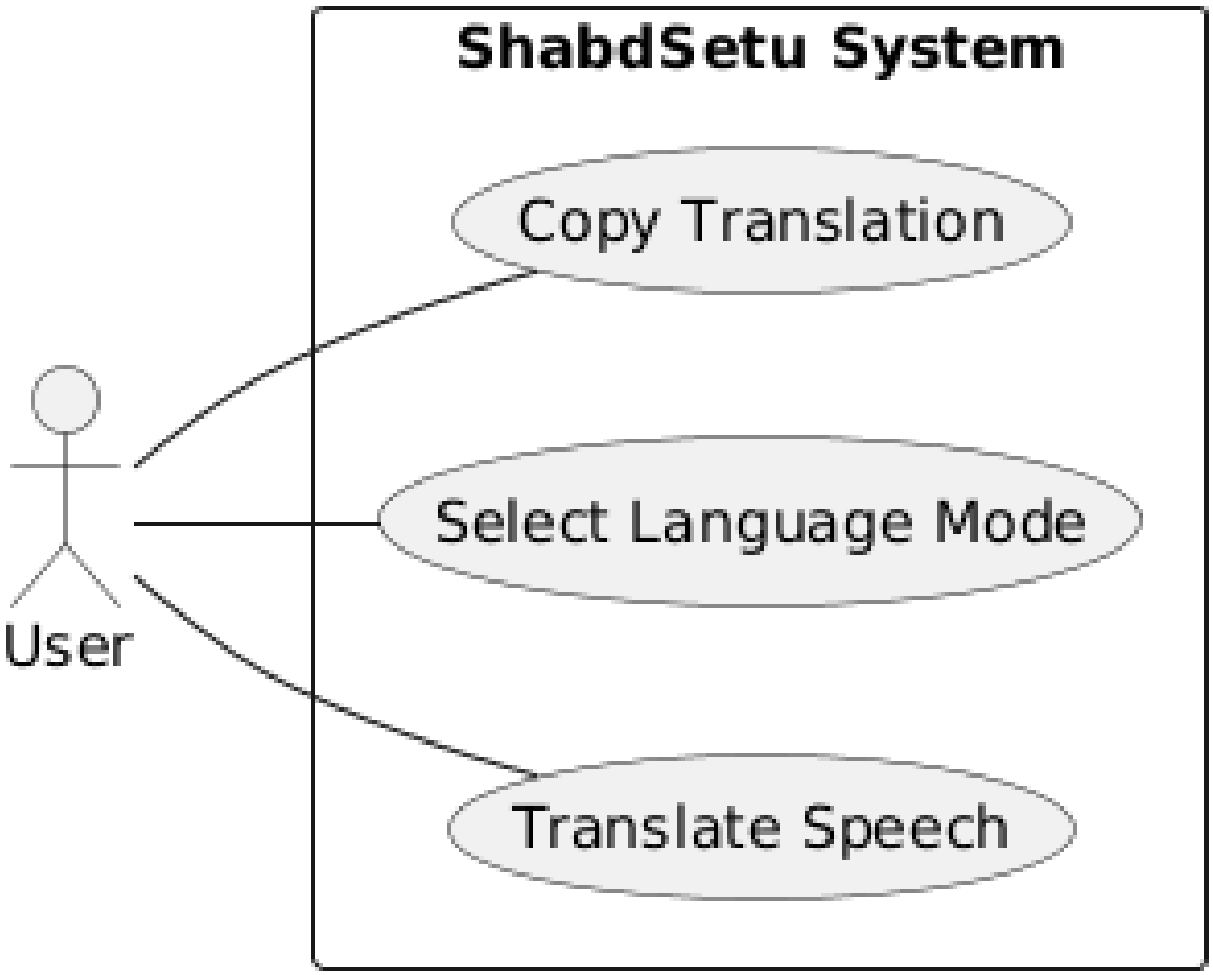
3. Class Diagram

This diagram details the primary classes in the backend system, focusing on the `BilingualTranslationService`. It shows the attributes and methods that encapsulate the core translation logic and its relation to the FastAPI app.



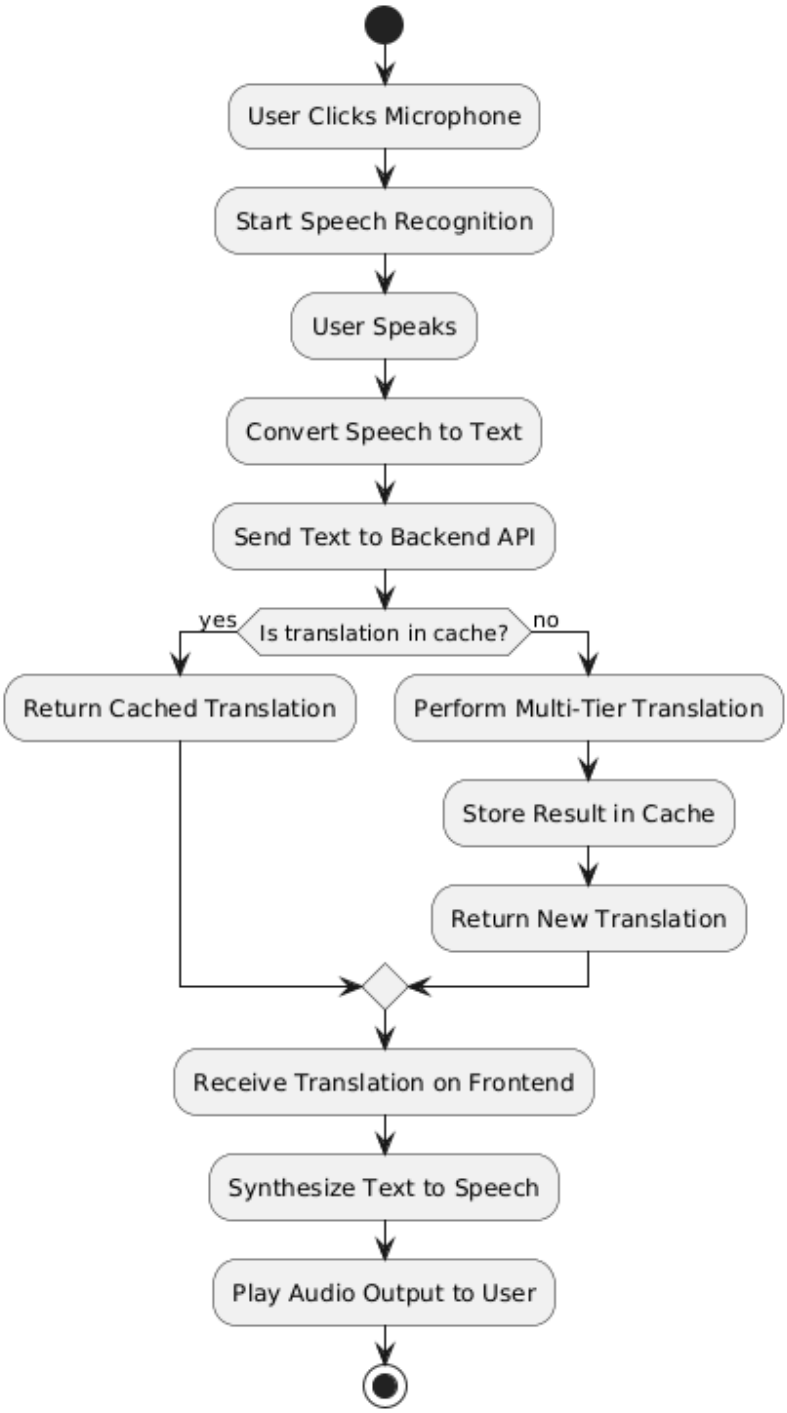
4. Use Case Diagram

This diagram shows the interactions between the user (Actor) and the ShabdSetu system. It highlights the main functionalities available to the user, with 'Translate Speech' being the primary use case.



5. Activity Diagram

This diagram models the workflow of a complete speech-to-speech translation process from the user's perspectiv
It shows the sequence of activities from the initial user action to the final audio output.



6. Sequence Diagram

This diagram illustrates the interactions between different components of the system over time for a single transl
It clearly shows the flow of messages from the user's browser to the backend service and back.