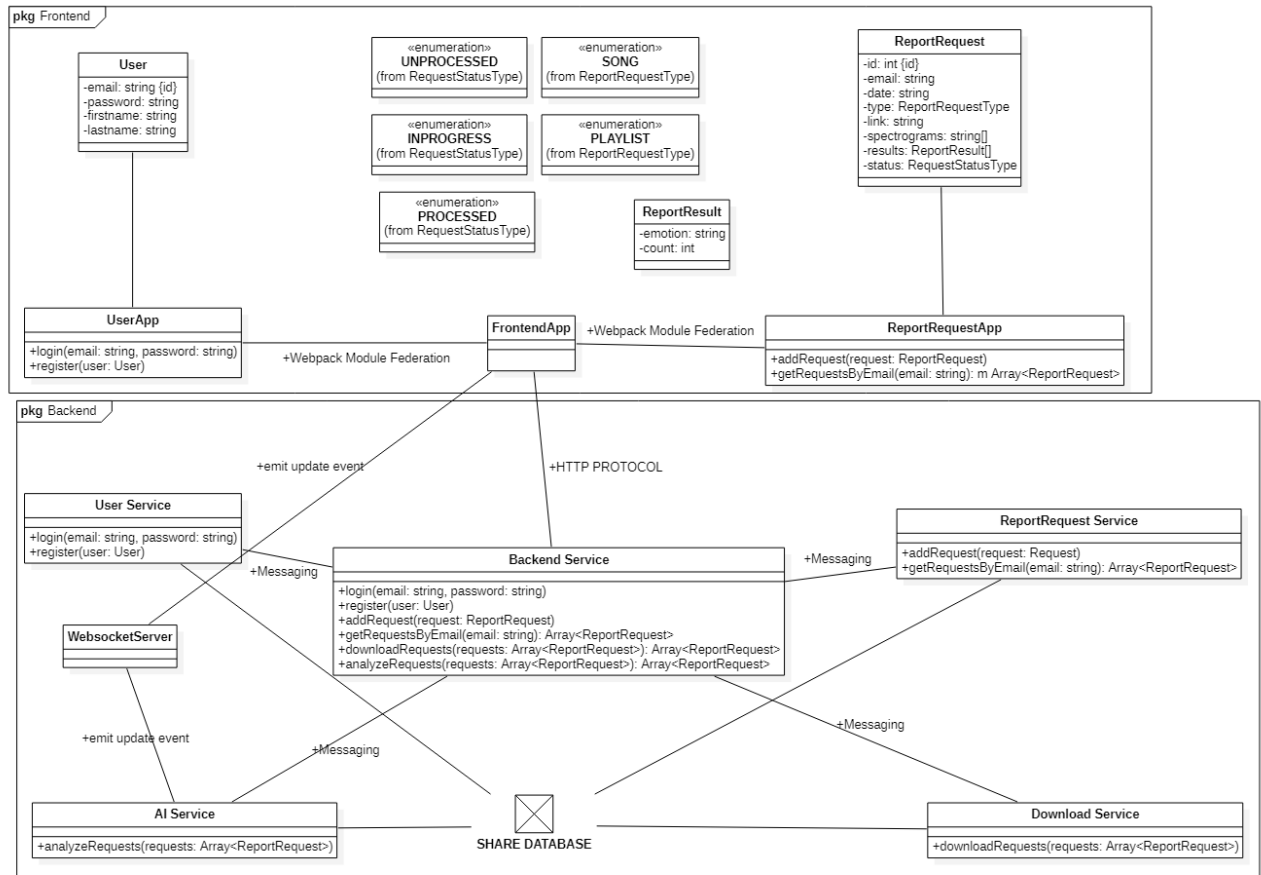


SOA DOCUMENTATION

System description

This is a web application that analyze emotions from songs represented by spectrograms. The frontend side was split in microservices by 2 entities (User and ReportRequest). A user can create an account and make requests of analyze reports to see which emotions can be detected in one song or in a playlist of songs. The backend side was split in other 5 services as it follows: the first one is the main server which manages the others. Then we have user service which realize the user features (login, register) and the report request service which realize the request features (add request, get all requests by email for an user). After a user made a request, the request will be initially saved with status UNPROCESSED. The backend server verifies at each second if there are unprocessed requests and if there are it changes them in INPROGRESS and send them to download service that realize the download of songs, their splitting in records of 6 seconds which will be transformed in spectrograms. The spectrograms will be passed then to AI service to analyse them. Finally, the status of the requests will be changed in PROCESSED and they will be sent via websocket to frontend. In this moment the external services are not implemented but they are simulated with mock-up data.

1) UML



2) SOA patterns used into the solution

Application architecture patterns

- Microservice architecture

Decomposition

- Decompose by subdomain
 - Frontend
 - Main Application
 - User Application
 - Report Request Application
 - Backend
 - Backend Service
 - User Service
 - Report Request Service
 - Download Service
 - AI Service

Data management

- Shared database : MongoDB

- Domain event: WebSocketServer

Communication patterns

- Backend: Messaging
- Frontend: Webpack Module Federation

Service discovery

- Client-side discovery
- Server-side discovery

Security

- Access Token

UI patterns

- Client-side UI composition
 - Main Application
 - User Application – user subdomain components
 - Report Request Application – report request subdomain components