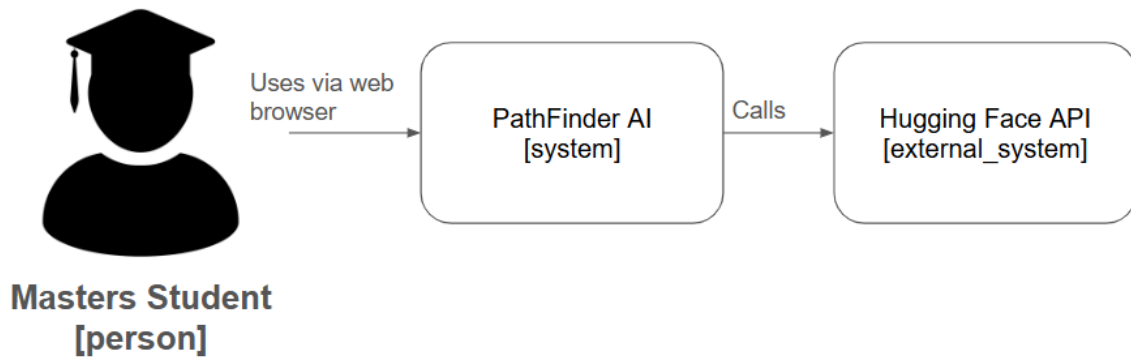


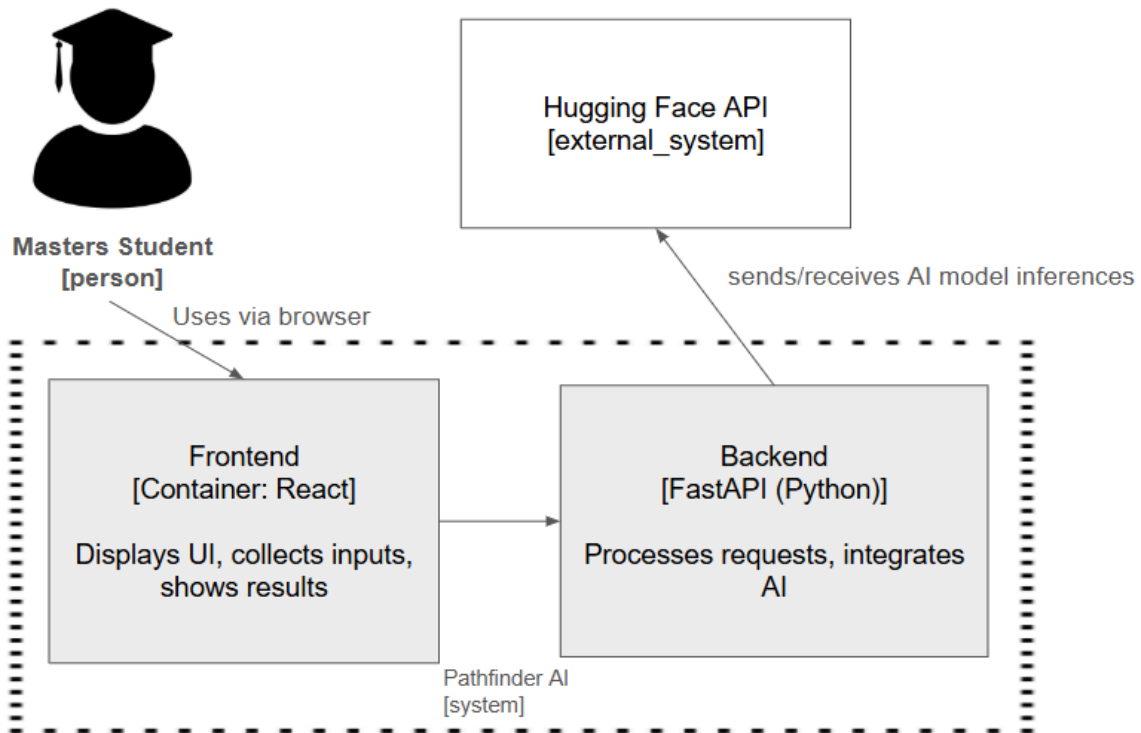
PathFinder AI - C4 Documentation

Level 1: System Context Diagram



- **Masters Student:** Primary user seeking career guidance
- **PathFinder AI:** Web application (our system)
- **Hugging Face API:** External AI service

Level 2: Container Diagram



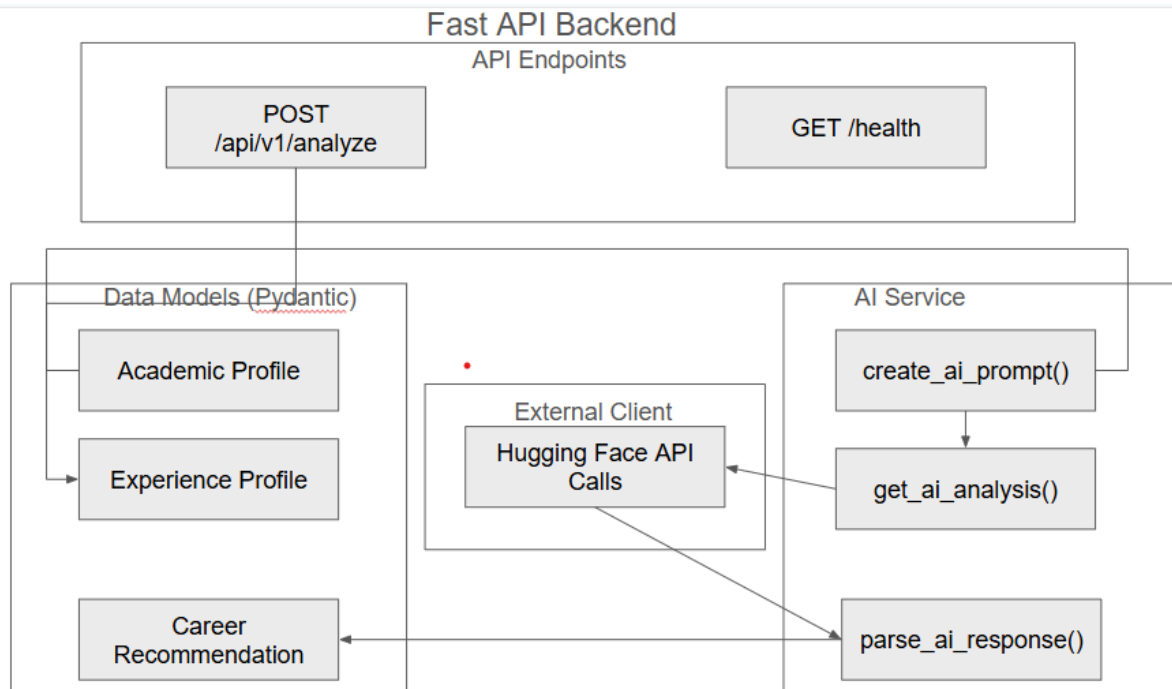
- **Masters Student:** Primary user seeking career guidance
- **PathFinder AI:** Web application (our system) consists of two main containers:
 - Frontend (React)
 - Backend (FastAPI, Python)
- **Hugging Face API:** External AI service

The Master's student uses the frontend via their web browser.

The frontend communicates with the Backend over JSON-based REST API calls.

The Backend communicates with the Hugging Face API to fetch AI-powered insights, then sends the result to backend.

Level 3: Component Diagram (Backend)

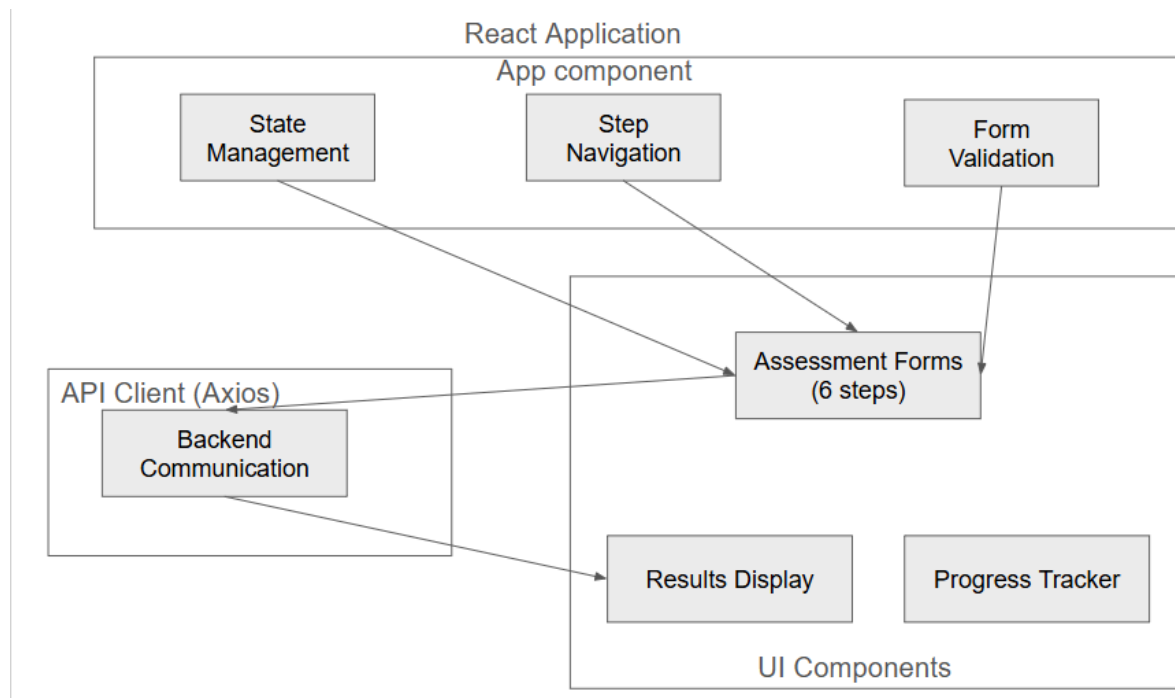


FastAPI Backend contains four components namely: API Endpoints, Data Models (Pydantic), AI Service (Business Logic), External Client

- **API Endpoints**
 - `GET /health`: It returns the system health status
 - `POST /api/v1/analyze`: accepts assessment data, returns recommendations
- **Data Models (Pydantic)**
 - `Academic Profile`: shows the schema for academic input
 - `Experience Profile`: shows schema for experience input
 - `Career Recommendation`: shows schema for AI-generated recommendations
- **AI Service (Business Logic)**
 - `create_ai_prompt()`: It converts user input into AI-friendly prompt
 - `get_ai_analysis()`: It calls Hugging Face API with prepared prompt
 - `parse_ai_responses()`: extracts structured recommendations

- **External Client (Integration)**
 - Sends requests to Hugging Face API
 - Handles responses and errors

Level 3: Component Diagram (Frontend)



In the React application, there are three components namely : App component, UI components and API Client (Axios)

App Component

- State Management : It handles user inputs and results
- Step Navigation : It moves user through the 6-step questionnaire
- Form Validation : It ensures valid inputs before proceeding

UI Components

- Assessment Forms (6 steps) : It captures academic & experience profile
- Progress Tracker : It shows user's completion status
- Results Display : It presents AI-generated recommendations

API Client (Axios)

- Sends requests to FastAPI backend
- Handles responses and errors