

# Sign-Sync

## Technical Installation Manual (Demo 4)



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# **Technical Installation Manual**

## **1. Introduction:**

The Sign-Sync system consists of a frontend service (React based web application) and 7 backend services (Python FastAPI microservices):

- alphabetTranslate-service
- speechToText-service
- textToASLGloss-service
- gestureRecognition-service
- signToText-service
- wordPrediction-service
- API\_Gateway-service

The frontend is responsible for the user interface, while the backend services handle translation, speech recognition, gesture recognition and text processing. To run the system you need to install both [Node.js](#) dependencies (frontend) and python dependencies (backend).

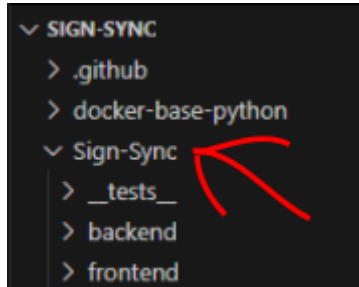
## **2. Prerequisites:**

Before installation, please ensure that the following are installed:

- Python 3.10.x (This is required for the backend services)
  - Download: <https://www.python.org/downloads/release/python-3100/>
- [Node.js](#) 20.x (LTS) (This is required for the frontend React app)
  - Download: <https://nodejs.org/en/download>
- Git (to clone the repository)
  - Download: <https://git-scm.com/downloads>
- Internet connection (to download npm modules and pip packages)

### 3. Installation:

- 1.) Clone the repository from github with:
  - a.) “git clone https://github.com/COS301-SE-2025/Sign-Sync.git”
- 2.) Navigate into the project folder:
  - a.) cd Sign-Sync



- 3.) Install frontend dependencies:
  - a.) npm install
- 4.) Setup Python virtual environment (backend dependencies)
  - a.) python -m venv venv
  - b.) .\venv\Scripts\activate (windows)
  - c.) source venv/bin/activate (Mac/Linux)
- 5.) Install backend dependencies:
  - a.) pip install -r ../[requirements.txt](#)

## 4. Running the application:

Whenever you start a new terminal, remember to activate the venv first with:

- `cd Sign-Sync`
- `venv\Scripts\activate`

Then run the services individually:

---- alphabetTranslate-service ----

- `cd backend/alphabetTranslate-service`
- `uvicorn translator_api:app --port 8000 --reload`

---- speechToText-service ----

- `cd backend/speechToText-service`
- `uvicorn API:app --port 8001 --reload`

---- textToAslGloss-service ----

- `cd backend/textToAslGloss-service`
- `uvicorn textConversion_api:app --port 8002 --reload`

---- gestureRecognition-service ----

- `cd backend/gestureRecognition-service`
- `uvicorn API:app --port 8003 --reload`

---- signToText-service ----

- `cd backend/signToText-service`
- `uvicorn signToText_API:app --host 0.0.0.0 --port 8004 --reload"`

---- wordPrediction-service ----

- `cd backend/wordPrediction-service`
- `uvicorn API:app --port 8006 --reload"`

---- API\_Gateway-service ----

- `cd backend/API_Gateway`
- `uvicorn gateway:app --port 8007 --reload"`

---- frontend (You do not need to activate the venv)----

- `cd Sign-Sync`
- `npm start`

Once the frontend starts, open your browser and navigate to <http://localhost:3000> where you will be able to use the application.

**Instead of running each of the commands, you can put them into a .bat file.  
Please see our run.bat file below:**

```
@echo off
echo =====
echo      Welcome to Sign Sync
echo =====
echo.

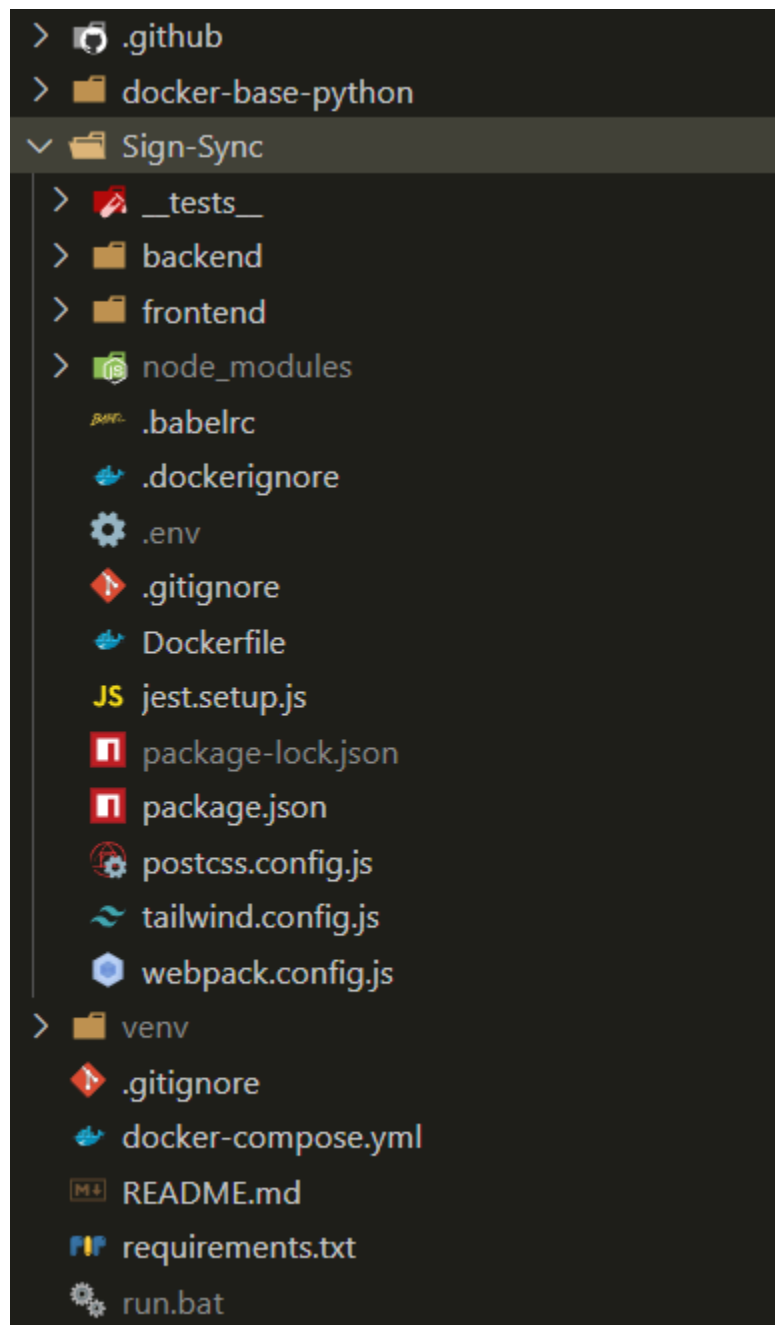
REM Start backend services in parallel (each with venv activated)
start cmd /k "call Sign-Sync\venv\Scripts\activate.bat && cd Sign-Sync\backend\alphabetTranslate-service && uvicorn translator_api:app --port 8000 --reload"
start cmd /k "call Sign-Sync\venv\Scripts\activate.bat && cd Sign-Sync\backend\speechToText-service && uvicorn API:app --port 8003 --reload"
start cmd /k "call Sign-Sync\venv\Scripts\activate.bat && cd Sign-Sync\backend\textToASLGloss-service && uvicorn textConversion_api:app --port 8002 --reload"
start cmd /k "call Sign-Sync\venv\Scripts\activate.bat && cd Sign-Sync\backend\gestureRecognition-service && uvicorn API:app --port 8008 --reload"
start cmd /k "call Sign-Sync\venv\Scripts\activate.bat && cd Sign-Sync\backend\signToText-service && uvicorn signToText_API:app --host 0.0.0.0 --port 8006 --reload"
start cmd /k "call Sign-Sync\venv\Scripts\activate.bat && cd Sign-Sync\backend\wordPrediction-service && uvicorn API:app --port 8005 --reload"
start cmd /k "call Sign-Sync\venv\Scripts\activate.bat && cd Sign-Sync\backend\API_Gateway && uvicorn gateway:app --port 8007 --reload"

REM Start frontend
cd Sign-Sync\frontend
call npm install
call npm start

echo =====
echo      Ready!
echo.
pause
```

**In order to use it:** Navigate to your run.bat file in file explorer and double click on this file

**This is what your directory should look like:**



## 5. User Manual:

For details on how to use the system after running it, please refer to the User Manual.