

API Documentation – Distance Calculation Service (Production Version)

Overview

This API calculates the shortest distance from a user's location to multiple school locations using KD-Tree for nearest-node detection and a manual Dijkstra implementation on a graph loaded via NetworkX.

Base URL (Production)

https://gis.jauhartzky.my.id/web_gis_sekolah_revisi/apps

Endpoint: POST /calculate_distance

Full URL: https://gis.jauhartzky.my.id/web_gis_sekolah_revisi/apps/calculate_distance

Request Body (JSON)

```
{
  "user_lat": -6.982345,
  "user_lon": 110.412312,
  "schools": [
    {
      "nama_sekolah": "SMA Negeri 1",
      "latitude": -6.980111,
      "longitude": 110.414200
    }
  ]
}
```

Response Example (Success)

```
[
  {
    "nama_sekolah": "SMA Negeri 1",
    "distance": 1.27
  }
]
```

Response Example (No Path)

```
{  
  "nama_sekolah": "SMA X",  
  "distance": "No path"  
}
```

Error Responses

400 – Invalid input

500 – Internal server error

How the API Works

1. Loads a NetworkX graph from pickle.
2. Builds a KD-Tree for fast nearest-node lookup.
3. Runs manual Dijkstra for Single Source Shortest Path.
4. Results are cached for faster repeated queries.
5. Returns distance in kilometers with two-decimal precision.

Example Curl Command (Production URL)

```
curl -X POST https://gis.jauhartzy.my.id/web_gis_sekolah_revisi/apps/calculate_distance \  
-H "Content-Type: application/json" \  
-d '{  
  "user_lat": -6.982345,  
  "user_lon": 110.412312,  
  "schools": [  
    {  
      "nama_sekolah": "SMA A",  
      "latitude": -6.981900,  
      "longitude": 110.415200  
    }  
  ]  
}'
```