Creating GPX tracks from cycle routes in OpenStreetMap

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Overview

1. Introduction
2. OpenStreetMap Data
3. Processing Cycle Routes
4. Complete Cycle Routes
5. Challenges & Next Steps
Introduction
Who I am

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Cycling
Following cycle routes

- Poor or damaged signage
- Foliage covers signes
- Hard to recover when off route
OpenCycleExport

github.com/hpgmiskin/OpenCycleExport
Why GPX files
OpenStreetMap Data
OpenStreetMap Data Model

Node

Way

Relation

Coordinate

Road

Footpath

Cycle Route
Shapely Linemerge
Shapely Linemerge Issues
Ways not terminating together
Ways not connected
Processing Cycle Routes
How it works

1. Overpass API
2. Result Cache
3. Download Relation
4. Process Ways
5. Create Route
6. Save GPX File
Processing ways

1. Find all places ways intersect
2. Split ways at all intersecting points
3. Create cost matrix between all intersections

\[ \text{COST} = \text{DISTANCE} \times \text{COEFFICIENT} \]
Creating a route

1. Find furthest points from one another
2. Use Dijkstra's algorithm to find shortest path
3. Compute route in both directions
Basic routing example
Missing link example
Complete Cycle Routes
Belgium - RV4
France - V86
Challenges & Next Steps
Current challenges

- Finding elevation data for routes
- Continuity of cycle routes or route data
- Finding the true start and end points
Next Steps

- Release GPX files on GitHub
- Declare which routes are not continuous
- Split routes by the towns they pass through
Any questions?