Spatial Optimisation with OSRM and R

Finding the perfect running route

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Exegetic Analytics
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What can I see in Toulouse?
Within different time intervals?
With my running shoes on?
# Necessary infrastructure.
sudo apt update
sudo apt install -y git cmake build-essential jq htop \
    liblua5.2-dev libboost-all-dev \
    libprotobuf-dev libtbb-dev \
    libstxxl-dev libbz2-dev

# Grab the source on GitHub.
git clone https://github.com/Project-OSRM/osrm-backend.git

# Create a build folder and then run cmake.
cd osrm-backend/
mkdir build
cd build/
cmake ..

# Next initiate the build.
# This will take some time - grab a cup of coffee!
make

# When the build completes,
# make the install target for OSRM.
sudo make install
Getting the data - www.openstreetmap.org
Preparing the data

Extract the map

- car
- bike
- foot

`osrm-extract map.xml -p profiles/foot.lua`
Preparing the data

Extract the map

- car
- bike
- foot

```
osrm-extract map.xml -p profiles/foot.lua
```

Create the hierarchy

```
osrm-contract map.xml.osrm
```

Launch the service

```
osrm-routed map.xml.osrm
```
How long and far to walk from here to the Capitole?

curl "http://127.0.0.1:5000/route/v1/walking/1.434562,43.611834;1.443372,43.604478" | jq

```json
{
    "code": "Ok",
    "waypoints": [
        {
            "hint": "rF0BgK5dAYCwAQAA3AAAAAAAAAAAAA_25wQu2E80EAAAAAAAAALABAAADcAAAAAAAABAAAAAxQ",
            "distance": 22.597897,
            "location": [1.43482, 43.611913],
            "name": "Esplanade Compans Caffarelli"
        },
        {
            "hint": "IxMAgNvgAIA9AQAAPQEEEEEEEEEEEE2VswQhh7L0IAAAAAAAAAD0BAAA9AQyyyyMMddAAAABAAAAAxQ",
            "distance": 33.50137,
            "location": [1.442962, 43.604431],
            "name": "Place du Capitole"
        }
    ]
}
```
How long and far to walk from here to the Capitole?

"routes": [
  {
    "legs": [
      {
        "steps": [],
        "weight": 824.4,
        "distance": 1142.2,
        "summary": "",
        "duration": 824.4
      }
    ],
    "weight_name": "duration",
    "geometry": "m}diGsfwGp@]_@gBrCyA|@Ah@_@jHiCxAmA|AsErAyBjAsCvN_R?o@lA0",
    "weight": 824.4,
    "distance": 1142.2,
    "duration": 824.4
  }
]
The osrm R package

install.packages('osrm')
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What can I see from my Airbnb with my running shoes on?

isochrone = a line connecting points relating to the same travel time.
The osrm R package

install.packages('osrm')

What can I see from my Airbnb with my running shoes on?

**isochrone** = a line connecting points relating to the same travel time.
# Libraries
library(osrm)
library(leaflet)
library(dplyr)

# Point to osrm server
options(osrm.server = "http://127.0.0.1:5000/")

# Set location
loc <- c(1.42, 43.59)

# Generate isochrones at time intervals
iso <- osrmIsochrone(loc,
                         breaks = seq(from = 0, to = 30, by = 5),
                         res = 400)

# Plot with Leaflet
leaflet(data = iso) %>%
    setView(lng = 1.42, lat = 43.59, zoom = 13) %>%
    addTiles() %>%
    addMarkers(lng = 1.42, lat = 43.59, popup = "My Airbnb") %>%
    addPolygons()
So, who's coming at 6am tomorrow?!

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