Technical Tuesdays

Leaflet and LaTeX

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Technical Tuesdays

Introduction
15 Oct

*nix Shell
22 Oct

R Scripting
29 Oct

Python
12 Nov

JavaScript
19 Nov

Databases
26 Nov

Version Control
03 Dec

Leaflet and LaTeX
10 Dec

Mapping

R (tmap, ggplot2)

Python (GeoPandas / Pandas / Matplotlib)

Q-GIS

ArcGIS Desktop / Pro

Mapping

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Python (GeoPandas / Pandas / Matplotlib)

Q-GIS

ArcGIS Desktop / Pro

Webmapping

OpenLayers

Leaflet.js

D3

MapBox Studio

ArcGIS Online

Tableau

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Webmapping

Data

‘slippy’ maps

Leaflet.js

GeoJSON

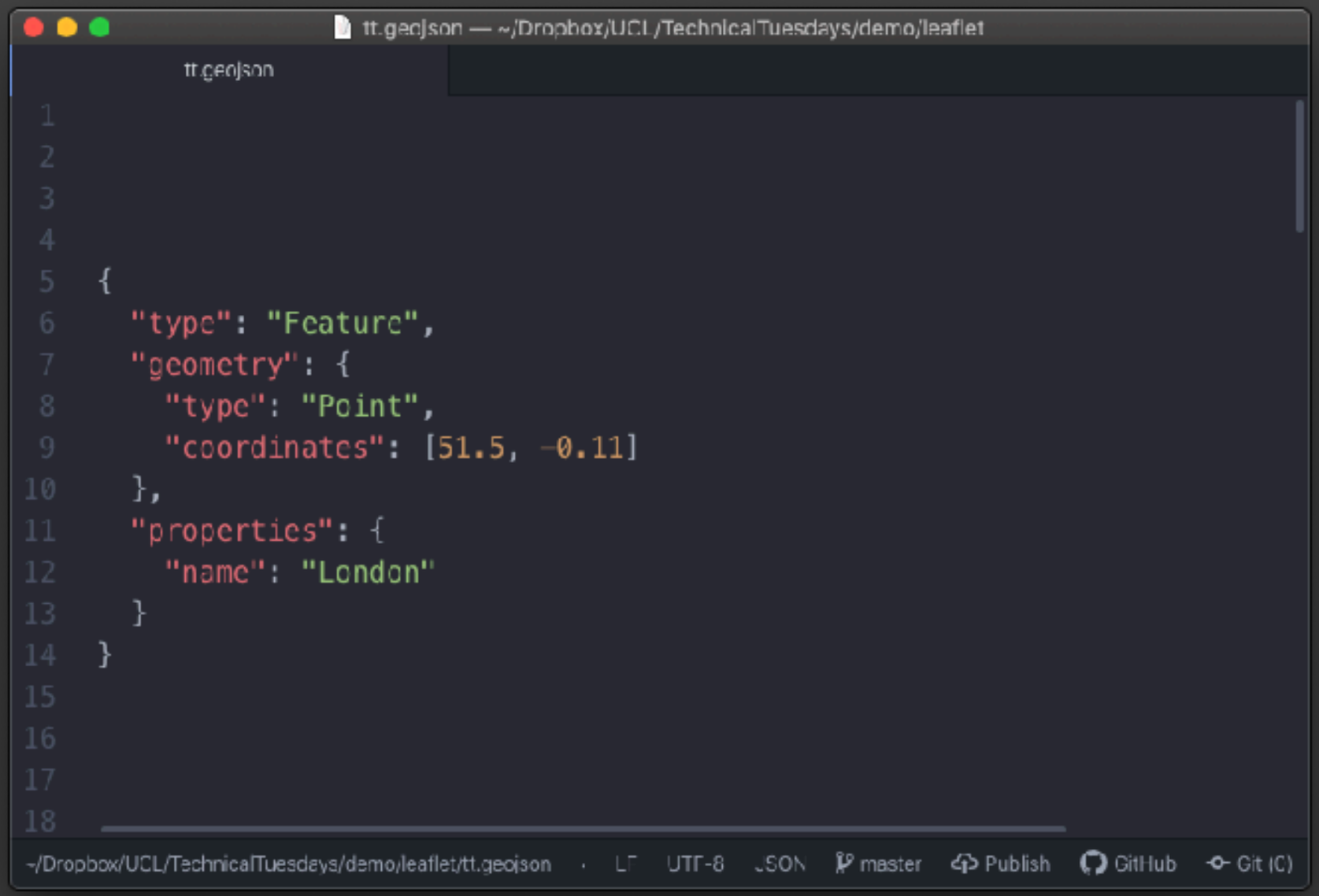
JSON specification

Specify geographical data in an consistent way

Non-geographical attributes

Always uses WGS84 and decimal degrees

GeoJSON


tt.geojson — ~/Dropbox/UCL/TechnicalTuesdays/demo/leaflet
tt.geojson
{
"type": "Feature",
"geometry": {
"type": "Point",
"coordinates": [51.5, -0.11]
},
"properties": {
"name": "London"
}
}
~/Dropbox/UCL/TechnicalTuesdays/demo/leaflet/tt.geojson
UTF-8
master
Publish
GitHub
Git (C)

GeoJSON

tt.geojson — ~/Dropbox/UCL/TechnicalTuesdays/demo/leaflet

tt.geojson

```
17
18
19  {
20    "type": "Feature",
21    "geometry": {
22      "type": "LineString",
23      "coordinates": [
24        [102.0, 0.0], [103.0, 1.0], [104.0, 0.0], [105.0, 1.0]
25      ]
26    },
27    "properties": {
28      "prop0": "value0",
29      "prop1": 0.0
30    }
31  }
32
33
34
```

~/Dropbox/UCL/TechnicalTuesdays/demo/leaflet/tt.geojson · LF UTF-8 JSON master Publish GitHub Git (0)

GeoJSON

tt.geojson — ~/Dropbox/UCL/TechnicalTuesdays/demo/leaflet

tt.geojson

```
36
37  {
38    "type": "Feature",
39    "geometry": {
40      "type": "Polygon",
41      "coordinates": [
42        [
43          [100.0, 0.0], [101.0, 0.0], [101.0, 1.0],
44          [100.0, 1.0], [100.0, 0.0]
45        ]
46      ]
47    },
48    "properties": {
49      "prop0": "value0",
50      "prop1": { "this": "that" }
51    }
52  }
53
```

~/Dropbox/UCL/TechnicalTuesdays/demo/leaflet/tt.geojson LF UTF-8 JSON master Publish GitHub Git (C)

TopoJSON

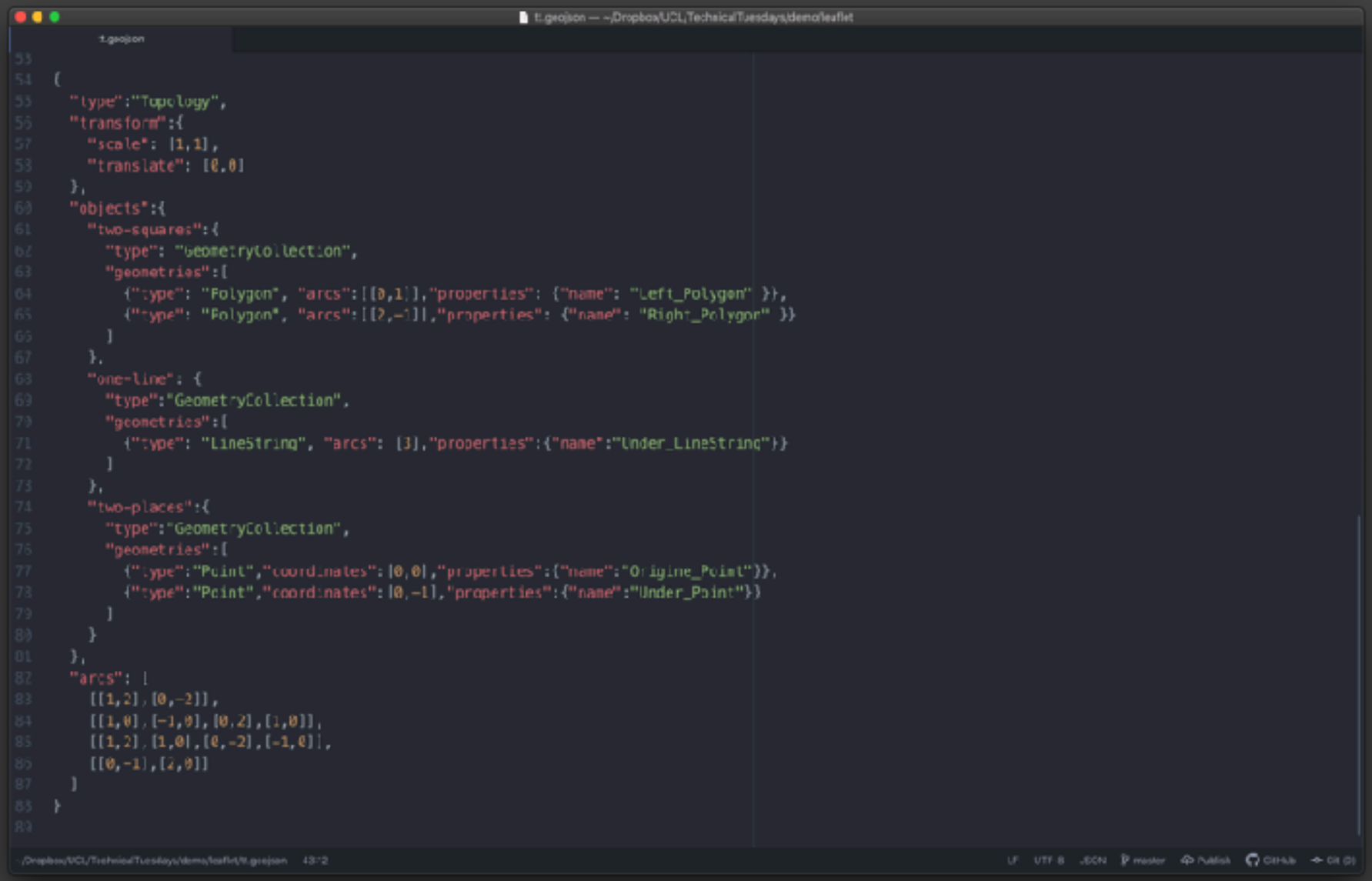
Extension of GeoJSON

Compact

Relative coordinates

Shared nodes, arcs defined only once — topology encoded

TopoJSON


t.geojson — ~/Dropbox/UCL/TechnicalTuesdays/demo/leaflet
t.geojson
{
"type":"Topology",
"transform":{
"scale": [1,1],
"translate": [0,0]
},
"objects":{
"two-squares":{
"type": "GeometryCollection",
"geometries":[
{"type": "Polygon", "arcs":[[0,1]],"properties": {"name": "Left_Polygon" }},
{"type": "Polygon", "arcs":[[2,-1]],"properties": {"name": "Right_Polygon" }}
]
},
"one-line": {
"type":"GeometryCollection",
"geometries":[
{"type": "LineString", "arcs": [3],"properties":{"name":"Under_LineString"}}
]
},
"two-places":{
"type":"GeometryCollection",
"geometries":[
{"type":"Point","coordinates":[0,0],"properties":{"name":"Origine_Point"}},
{"type":"Point","coordinates":[0,-1],"properties":{"name":"Under_Point"}}
]
}
},
"arcs": [
[[1,2],[0,-2]],
[[1,0],[-1,0],[0,2],[1,0]],
[[1,2],[1,0],[0,-2],[-1,0]],
[[0,-1],[2,0]]
]
}
/Dropbox/UCL/TechnicalTuesdays/demo/leaflet/t.geojson 43:2
LF UTF-8 JSON master Publish GitHub Git (0)

‘slippy’ maps

Images should be served as tiles on a grid

Amalgamation of individual requested raster or vector files

‘slippy’ maps

‘slippy’ maps

‘slippy’ maps

Pre-rendered rasters (e.g. Mapnik with Python bindings)

Vector tiling (tiles, but vectors)

Leaflet

Open-source JavaScript library

Mobile-friendly interactive maps

Light weight (about 38 KB of JS)

Simplicity

Resources

Leaflet.js

https://leafletjs.com/index.html

JavaScript

https://www.w3schools.com/js/js_intro.asp

Demo

LaTeX

/ˈlɑːtɛx/ LAH-tekh or /ˈleɪtɛx/ LAY-tekh

Where does LateX come from?

Printing Press

Typesetting

Workspace

Wordprocessing

Why use Latex?

Consistency

Production Quality documents

Programmatically generate documents

Sensible cross-referencing

Where can I start using Latex?

Demo

Examples

Overleaf

https://www.overleaf.com/latex/templates

My PhD Thesis

https://github.com/sbmkvp/phd_thesis/raw/master/thesis.pdf

Questions

Feedback!