AUTOGIS 2021

HELSINGIN YLIOPISTO
HELSINGFORS UNIVERSITET
UNIVERSITY OF HELSINKI

THE TEAM

Håvard Wallin Aagesen
Lessons, materials

Vuokko Heikinheimo
Guest lesson, materials

Henrikki Tenkanen
Materials

Bryan R. Vallejo
Practical sessions

Justus Poutanen
Practical sessions

LEARNING GOALS

After completing this course, you should be able to:

- test and produce **modular code** in the Python programming language
- **manage spatial data** programmatically (for example, reading different data formats, re-projecting, re-classifying and storing data)
- **apply spatial analysis methods** in Python (such as buffering, network analysis and spatial joins)
- create **visualizations** (graphs and maps) from geographic data using Python
- design and implement a geographical **data analysis workflow**

GENERIC SKILLS

After completing this course, you should be able to:

- Independently **search for information** regarding programming methods
- **Apply new methods** based on online documentation
- **Critically evaluate** the available methods and information sources
- Understand the importance of **version control** for practical tasks and scientific purposes
- **Communicate** their analysis workflow in written format
- Complete assingments **on time**

COURSE MATERIALS

Lessons: autogis-site.readthedocs.io

Exercises: github.com/autogis-2021

Slack: geo-python2021.slack.com

— **new channels:** #autogis-week*

CSC notebooks: notebooks.csc.fi/

— AutoGIS 2021

COURSE TOPICS

1	Shapely and geometric objects (points, lines and polygons)
2	Managing spatial data with Geopandas (reading and writing data, projections, table joins)
3	Geocoding and spatial queries
4	Reclassifying data, overlay analysis
5	Visualization: static and interactive maps
6	Course recap and preparing for the final assignment
7	OpenStreetMap data (osmnx) and Network analysis (networkx)
Extra	Raster processing (rasterio), Python in QGIS

COURSE EVALUATION

6 weekly exercises (40 % of final assesment)

Final assignment (60 % of final assessment)

DEADLINES

Weekly exercises are due in one week, each Thursday

Final assignment:

- 1st deadline: **31st December 2021**
- 2nd deadline: **16th January 2022**

You can choose either of these deadlines.
Those submitting early will get their credits earlier.

GIS IN PYTHON

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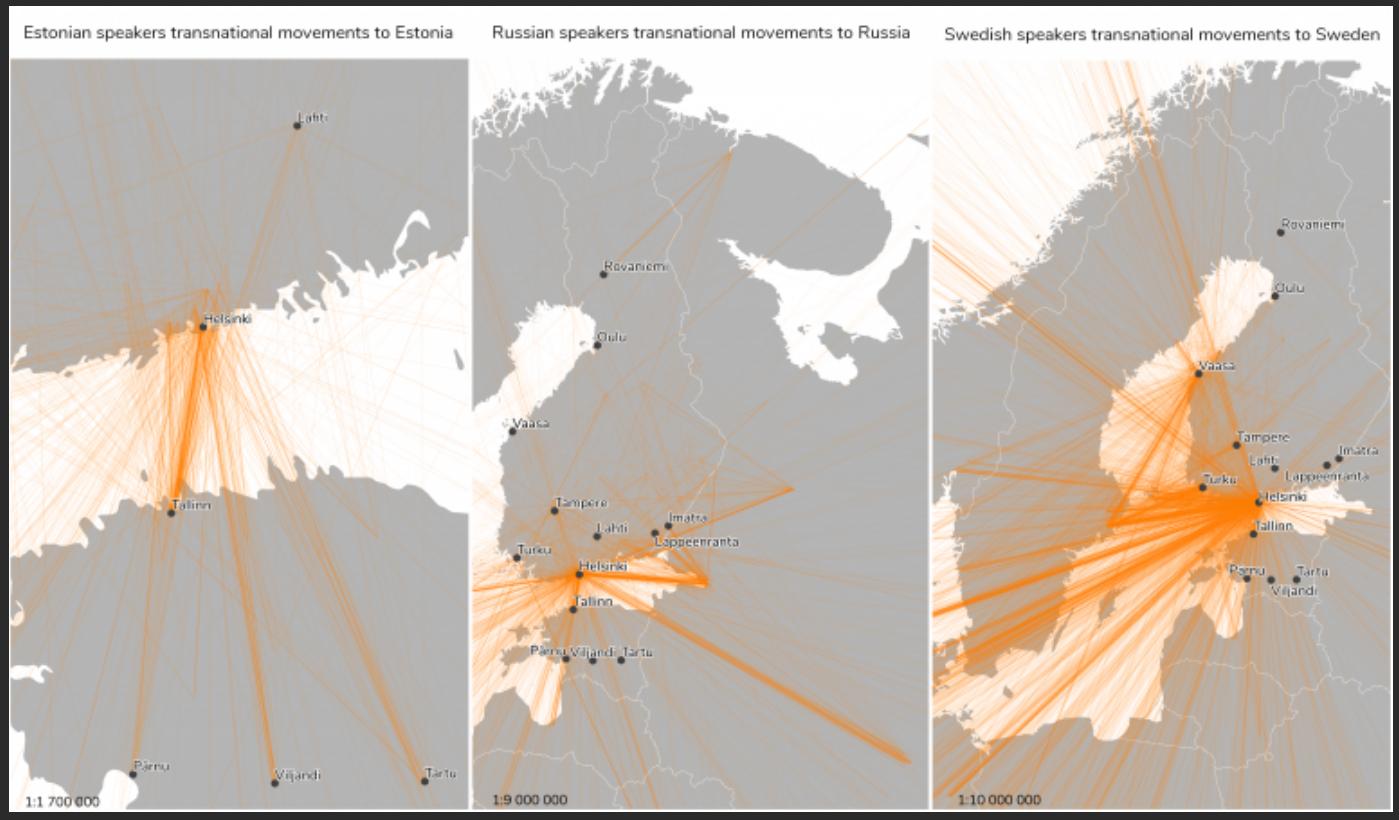
CAPTURING THE MOBILITY OF MINORITY LANGUAGE GROUPS IN FINLAND USING TWITTER DATA

MSc thesis, Emil Ehnström, 2021



Blog post

GitHub Repo

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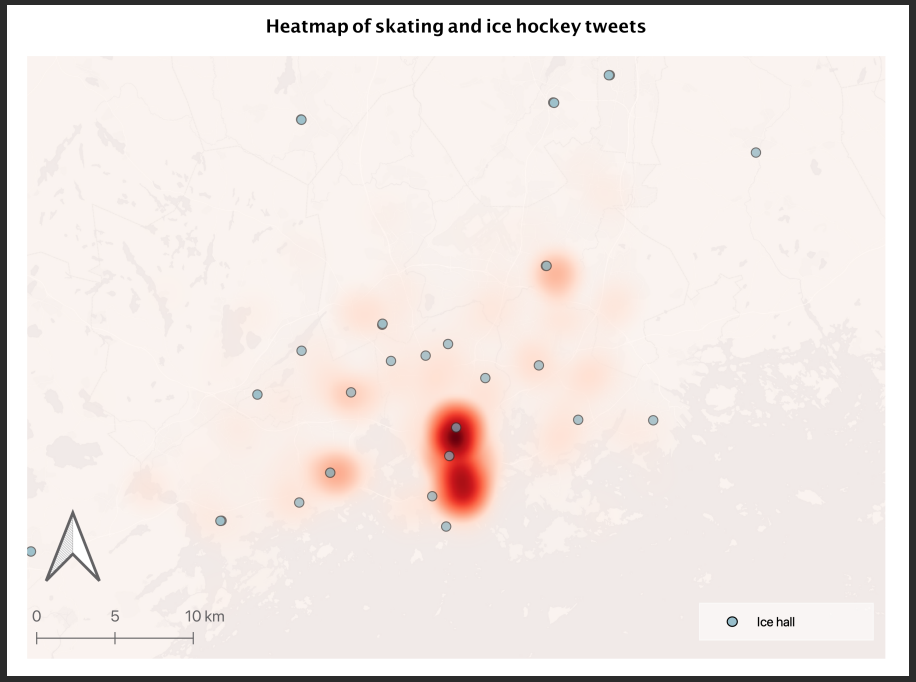
TWITTER AS AN INDICATOR OF SPORTS ACTIVITIES IN HELSINKI METROPOLITAN AREA

MSc thesis, Sonja Koivisto, 2021



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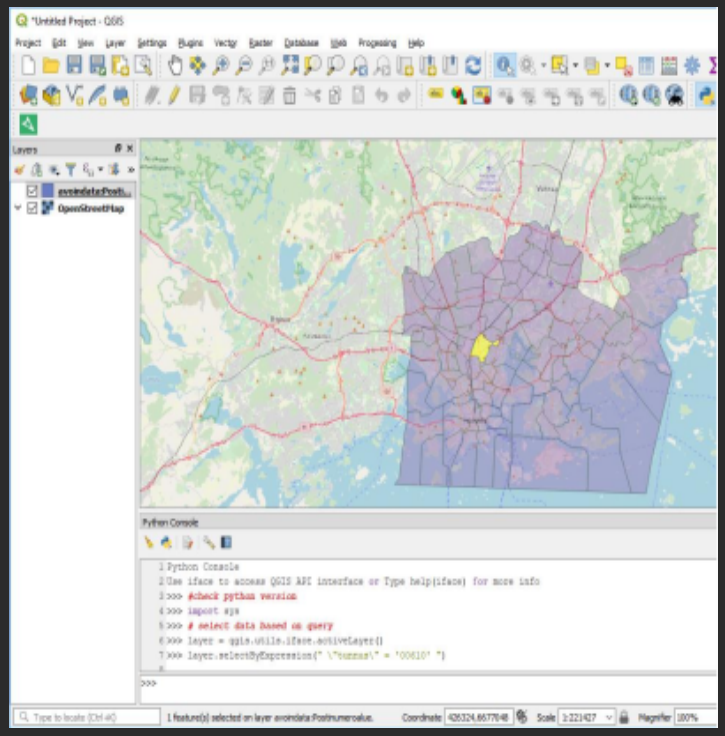
PYTHON IN QGIS



Python console

GeoCubes plugin

github.com/geoportti/GeoCubes-Finland-QGIS-Plugin

LET'S GET STARTED

autogis-site.readthedocs.io