Proposal for workshops – AGILE 2024

Glasgow, Tuesday 4 June 2024

https://agile-online.org/conference-2024

1. Workshop name/title (and acronym is applicable)

Introduction to Geographic Data Science in Python (AAG-SAM / QMRG Joint Session)

2. Description of the workshop by listing topic(s), objective(s) and planned outcome(s)

2.1 Topic(s)

Spatial analysis, mapping, geographic data processing, spatial autocorrelation, mapping, statistical inference

2.2 Objective(s)

Attendees will

- understand the main libraries used in geographic data analysis in Python

- make publication-quality choropleth maps

- estimate global autocorrelation statistics in Python

- estimate local autocorrelation statistics in Python

- interpret these spatial statistics by making a variety of graphs and maps.

2.3 Planned outcome(s)

Hands-On Tutorial for attendees, with learning outcomes as described in 2.2

A recording of taught content for https://geographicdata.science/book

3. Abstract

Geographic data science is a fast-moving and important area of geographic information science. As with many areas of data science, cutting-edge methods, tools, and techniques

are constantly evolving, but the underlying thinking and theory often remains similar over time. This workshop provides an introduction to cutting-edge geographic data science tools and techniques using the Python ecosystem of tools. This includes core components provided by Geopandas 1.0 and new spatial Graph functionality in Python Spatial Analytics Library (PySAL), useful for analyzing patterns in your data, understanding their spatial structure, and advanced mapping, and tools for spatial statistics and modelling. It reflects a cross-atlantic collaboration between the American Association of Geographers' Spatial Analysis and Modelling group (AAG-SAM) and the UK Royal Geographical Society's Quantitative Methods Research Group (QMRG)

4. Short description of the intended length (half or full day) and the format of the workshop

Full day, split into three two-hour blocks with a break.

5. Brief statement of the relevance of the workshop for AGILE

Geographic data science is an important area of activity, extending the standard toolkit for geographic information science to new approaches and new ways of thinking about and using geographic data. This workshop will be of serious interest to individuals interested in learning about the geographic data science ecosystem in Python, as well as those interested in an introduction to spatial analysis packages in Python. These are very commonly-used statistical approaches, and will be of general interest to the AGILE community as a consequence. Further, the workshop will serve to demonstrate and further integrate GIScience communities in Europe and the US through the partnership with the Spatial Analysis and Modelling specialty group in the AAG.

6. What is the approximate number of expected participants?

80

7. Names and e-mail addresses of the organizing member(s)

Leading AGILE member (or sponsor) and contact person:

Levi John Wolf (levi.john.wolf@bristol.ac.uk)

Contributing AGILE members (including the persons involved) – at least one seconding AGILE member is needed:

Qunshan Zhao (Qunshan.Zhao@glasgow.ac.uk)

Contributing non-AGILE members (including the persons involved) – if applicable:

Daniel Arribas-Bel (D.Arribas-Bel@liverpool.ac.uk), Martin Fleischmann (martin.fleischmann@natur.cuni.cz)

Organizing Committee (if applicable):

Sergio Rey (srey@sdsu.edu) Eli Knaap (ek@knaaptime.com) Daoqin Tong (Daoqin.Tong@asu.edu)

8. Additional information about previous workshops, if held.

Organizing members have extensive experience in this area:

- https://www.youtube.com/watch?v=fc1f4MNLzdQ
- https://www.youtube.com/watch?v=kJXUUO5M4ok
- https://www.youtube.com/watch?v=Ecp1nVypiNs
- https://av.tib.eu/player/59414

9. Expected resources needed

Internet connection, projector, desks/tables for attendees to work on their computers

10. Other information

The workshop will be a jointly delivered by Martin, Dani, and Levi.

Submission by e-mail to:

Dr Qunshan Zhao: Qunshan.Zhao@glasgow.ac.uk

Or Dr John Xiaogang Shi: John.Shi@glasgow.ac.uk