Outlook

Meeting Summary for Course: Geocomputation and geospatial analysis

---

From Meeting Summary with AI Companion <no-reply@zoom.us>
Date Thu 4/10/2025 11:51 AM
To Amatulli, Giuseppe <giuseppe.amatulli@yale.edu>

NEW Meeting summary with AI Companion now supports additional languages in preview.   **Learn More**

Meeting summary for Course: Geocomputation and geospatial analysis (04/10/2025)

Quick recap

Saverio introduced the use of matplotlib and seaborn libraries for data visualization in Python, demonstrating various plots and emphasizing the importance of histograms for understanding data distribution. He also discussed the use of Rasterio for handling raster data, including its integration with other libraries, and the importance of correctly labeling data in software. The team also discussed the use of shapefiles and geopackages in data processing, the utility of certain tools for data analysis, and the potential of these tools for creating buffers, cropping, and populating data sets from raster or other shapefiles.

Next steps

• All attendees to arrive in Lecce with a plan and dataset ready for the in-person meeting.
• All attendees to check the information sent by Mario regarding the class location and logistics.
• Mario to provide information about bus schedules for transportation to the campus area.
• Attendees with cars to coordinate carpooling to the campus.
• Giuseppe and Saverio to arrive early Tuesday morning for the in-person meeting.
• All attendees to participate in social dinners and brainstorming sessions outside of class time.
• All attendees to prepare questions or ideas for applying the Python techniques discussed (e.g. transect analysis, raster processing, shapefile manipulation) to their own datasets.

Summary

Matplotlib and Seaborn for Data Visualization

Saverio introduces matplotlib and seaborn libraries for data visualization in Python. He demonstrates how to create various plots including line plots, histograms, scatter plots, and box plots using data from a Matera weather dataset. Giuseppe emphasizes the importance of histograms for understanding data distribution and identifying outliers during initial data exploration. Saverio also shows how to use seaborn for more advanced visualizations like kernel density plots and heatmaps. He highlights the extensive documentation and online resources available for these libraries, encouraging participants to explore and adapt example code for their own datasets. The session concludes with a brief introduction to geospatial data handling using the Rasterio library.

Rasterio for Raster Data Manipulation

Saverio discussed the use of Rasterio for handling raster data, including its integration with other libraries like NumPy and SciPy. He explained how to import necessary libraries, access files, and plot raster data. Saverio also demonstrated how to perform basic manipulations like cropping and transforming raster data, and how to handle metadata. He showed how to use Rasterio for filtering and masking raster data, and how to perform operations like NDVI calculation. Saverio emphasized the importance of correctly handling no data values and updating metadata. He also mentioned the possibility of using Rasterio for more complex operations like object detection.

Data Labeling and Python Libraries

Giuseppe discussed the importance of correctly labeling data in software, emphasizing that this would likely prevent issues in older software and new data. He also mentioned the flexibility of Python libraries, such as numpy, for complex filtering operations. Saverio added that numpy's power lies in its ability to access and manipulate individual information in each array, but this can be memory-intensive. He suggested that downsizing could be more efficiently done on Gidal. The team also briefly discussed GeoPandas, a library used for handling vector files, but no specific decisions or next steps were mentioned.

Shapefiles and Geopackages in Data Processing

Saverio discussed the use of shapefiles and geopackages in data processing. He explained how to read and manipulate shapefiles, including extracting specific information and performing operations like intersection and cropping. Saverio also demonstrated how to create a new shapefile from a raster file, using the bounding box of the raster to select relevant polygons from the original shapefile. He further showed how to calculate the average NDVI value for each selected municipality and plot the results. Saverio also discussed the use of shapely geometry to create a polyline from a list of points and how to extract NDVI values along this polyline. He concluded by demonstrating how to create a buffer area from a polyline and use it to crop a raster file. Giuseppe suggested that attendees could use these techniques for their own image and vector file processing tasks.

Raster Data Analysis Tools Discussed

In the meeting, Saverio and Giuseppe discussed the utility of certain tools for data analysis, particularly in relation to raster data. They highlighted the potential of these tools

for creating buffers, cropping, and populating data sets from raster or other shapefiles. Giuseppe emphasized the versatility of these tools, especially in creating reports and presentations. The team also discussed the possibility of applying these tools to time series data and the importance of planning ahead for the upcoming in-person meeting.

AI-generated content may be inaccurate or misleading. Always check for accuracy.

Please rate the accuracy of this summary. 👍 👎

[Share summary]   [Edit]

Best,

Zoom

+1.888.799.9666

©2025 Zoom Communications, Inc.

Visit zoom.com

55 Almaden Blvd
San Jose, CA 95113