

Geoprocess

June 7, 2023

```
[1]: pip install geopandas shapely
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Requirement already satisfied: geopandas in /opt/conda/lib/python3.10/site-  
packages (0.13.2)  
Requirement already satisfied: shapely in /opt/conda/lib/python3.10/site-  
packages (2.0.1)  
Requirement already satisfied: fiona>=1.8.19 in /opt/conda/lib/python3.10/site-  
packages (from geopandas) (1.9.4.post1)  
Requirement already satisfied: packaging in /opt/conda/lib/python3.10/site-  
packages (from geopandas) (23.1)  
Requirement already satisfied: pandas>=1.1.0 in /opt/conda/lib/python3.10/site-  
packages (from geopandas) (2.0.2)  
Requirement already satisfied: pyproj>=3.0.1 in /opt/conda/lib/python3.10/site-  
packages (from geopandas) (3.5.0)  
Requirement already satisfied: numpy>=1.14 in /opt/conda/lib/python3.10/site-  
packages (from shapely) (1.24.3)  
Requirement already satisfied: attrs>=19.2.0 in /opt/conda/lib/python3.10/site-  
packages (from fiona>=1.8.19->geopandas) (23.1.0)  
Requirement already satisfied: certifi in /opt/conda/lib/python3.10/site-  
packages (from fiona>=1.8.19->geopandas) (2023.5.7)  
Requirement already satisfied: click~=8.0 in /opt/conda/lib/python3.10/site-  
packages (from fiona>=1.8.19->geopandas) (8.1.3)  
Requirement already satisfied: click-plugins>=1.0 in  
/opt/conda/lib/python3.10/site-packages (from fiona>=1.8.19->geopandas) (1.1.1)  
Requirement already satisfied: cligj>=0.5 in /opt/conda/lib/python3.10/site-  
packages (from fiona>=1.8.19->geopandas) (0.7.2)  
Requirement already satisfied: six in /opt/conda/lib/python3.10/site-packages  
(from fiona>=1.8.19->geopandas) (1.16.0)  
Requirement already satisfied: python-dateutil>=2.8.2 in  
/opt/conda/lib/python3.10/site-packages (from pandas>=1.1.0->geopandas) (2.8.2)  
Requirement already satisfied: pytz>=2020.1 in /opt/conda/lib/python3.10/site-  
packages (from pandas>=1.1.0->geopandas) (2023.3)  
Requirement already satisfied: tzdata>=2022.1 in /opt/conda/lib/python3.10/site-  
packages (from pandas>=1.1.0->geopandas) (2023.3)  
Note: you may need to restart the kernel to use updated packages.
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[4]: import geopandas as gpd
from shapely.geometry import Point

# Create a GeoDataFrame with points
points_data = {'Name': ['Point A', 'Point B', 'Point C'],
               'Latitude': [52.5200, 51.5074, 48.8566],
               'Longitude': [13.4050, -0.1278, 2.3522]}
points_df = gpd.GeoDataFrame(points_data, geometry=gpd.
    ↪points_from_xy(points_data['Longitude'], points_data['Latitude']))

# Create a buffer around the points
buffer_distance = 0.1 # in degrees
buffered_points = points_df.buffer(buffer_distance)

# Create a GeoDataFrame with polygons from the buffered points
polygons_df = gpd.GeoDataFrame(geometry=buffered_points)

# Perform spatial intersection between the points and polygons
intersection = gpd.sjoin(points_df, polygons_df, op='intersects')

# Print the result
print(intersection)
```

	Name	Latitude	Longitude	geometry	index_right
0	Point A	52.5200	13.4050	POINT (13.40500 52.52000)	0
1	Point B	51.5074	-0.1278	POINT (-0.12780 51.50740)	1
2	Point C	48.8566	2.3522	POINT (2.35220 48.85660)	2

```
/opt/conda/lib/python3.10/site-packages/IPython/core/interactiveshell.py:3448:
FutureWarning: The `op` parameter is deprecated and will be removed in a future
release. Please use the `predicate` parameter instead.
    if await self.run_code(code, result, async_=asy):
```

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[ ]:
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