

Task

Structure of the  
Function

Load Shapefile  
Bounding Box  
Create Grid  
Within Query  
Unite sublists  
Set radiometric  
resolution  
Flip array  
Save as tiff

Issues

# GIS+ Project

## Rasterizer

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# Task: Rasterizer

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### Issues

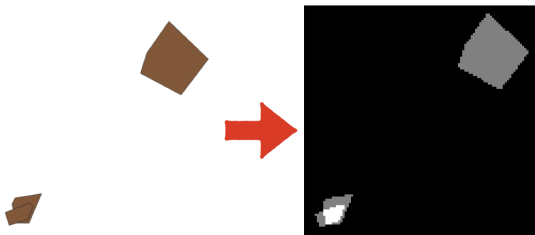


Figure: from shape to raster

# Load Shapefile with Fiona Package

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## Issues

```
43 | # collect geometries of shape file
44 | geometry_coll = spg.collection.GeometryCollection(
45 |     [shape(pol['geometry']) for pol in fiona.open(filepath)]
46 | )
```

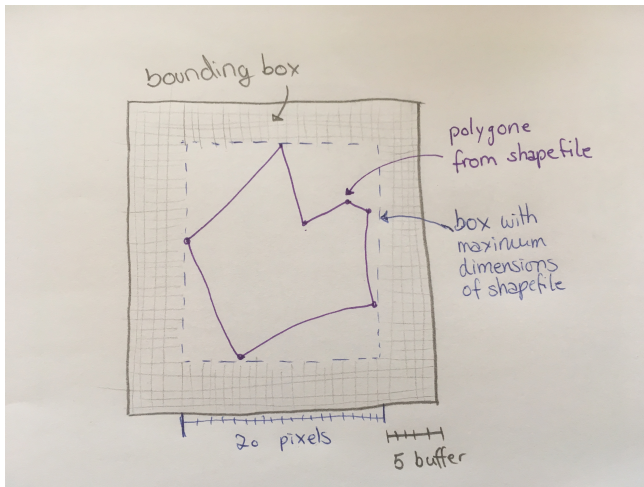
# Bounding Box

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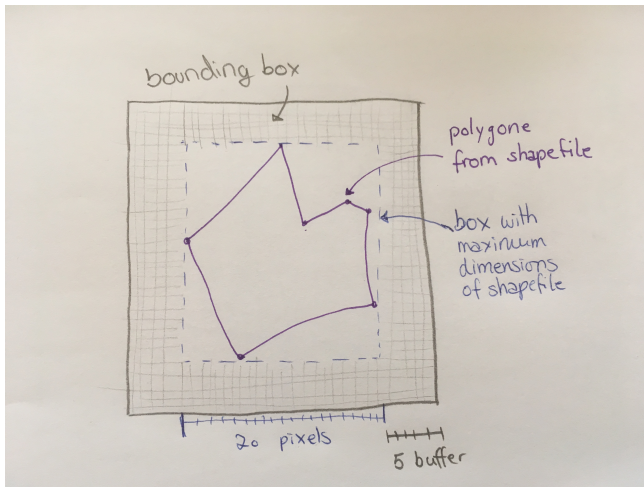
# Create a grid

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# Within query

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```
90     within_list = []
91     for i in range(0, len(geometry_coll)):
92         if isinstance(geometry_coll[i], spg.polygon.Polygon):
93             step = [pixel.within(geometry_coll[i]) for pixel in geom_pixels]
94         if isinstance(geometry_coll[i], spg.point.Point):
95             step = [
96                 (
97                     (pixel.x > (geometry_coll[i].x - 0.5 * resolution)) &
98                     (pixel.x <= (geometry_coll[i].x + 0.5 * resolution))
99                 ) &
100                 (
101                     (pixel.y > (geometry_coll[i].y - 0.5 * resolution)) &
102                     (pixel.y <= (geometry_coll[i].y + 0.5 * resolution))
103                 ) for pixel in geom_pixels
104             ]
105
106         if isinstance(geometry_coll[i], spg.linestring.LineString):
107             step = [pixel.within(geometry_coll[i].buffer(float(resolution)))]
108             for pixel in geom_pixels
109         print('The process is running: {}% completed'.format(
110             (round(100 * i / len(geometry_coll), 2))))
111     within_list.append(step)
```

# Unite sublists

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Within Query

**Unite sublists**

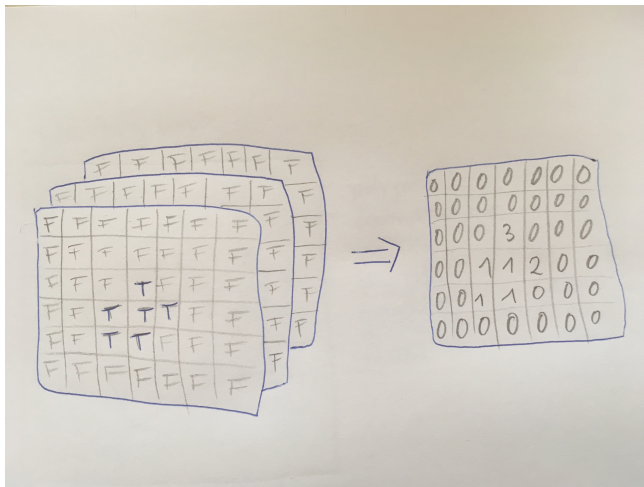
Set radiometric

resolution

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## Issues



# Set radiometric resolution

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## Issues

```
117     # set radiometric resolution to 8bit
118     within_list_sum = np.round_(255 * (np.true_divide(within_list_sum,
max(within_list_sum))))
```



# Flip array

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## Issues

```
129 | # flip array for correct presentation  
130 | flipped_array = np.flipud(within_array)
```

# Save as tiff

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## Issues

```
139 | ##write image data to tiff file
140 | sk.external.tifffile.imwrite(outputname, flipped_array)
141 |
```

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Issues

## Solved

- Set accurate resolution even if you dont know the range of the coordinates
- Raster-conversion for shp-types point, line and polygon
- Git

# Issues

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## Issues

### unsolved

- Save tiff-file with reference-system
- Define grey-values in tiff-file according to a specific attribute of the shapefile
- Possibility to choose radiometric resolution of tiff-file