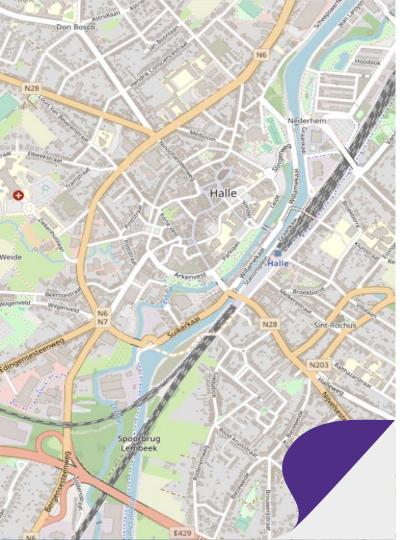


# Polygon Automation

StickEarn Internship Program

Prasasti Arika Widya





# **Outline**

- Problem Area and Goals
- Solution and Implementation
- Conclusion
- <u>IPython Notebook</u>



# Problem Area, Goals

[Polygon Automation]



### **PROBLEM AREA**

- Creating a route polygon manually is a time-consuming process.
- Limitations on the number of vertex points in Google My Maps' polygon.

### **GOALS**

 Improve time efficiency by manipulating geospatial data using Python.







#### Google maps: limits on number of points, vertices and polygons

"When I was using polygons to outline boundaries of cities, it seems google maps has restricted the number of points to something like 256 points for a single polygon. That's because when it reaches it's limit, it will no longer allow me to grab another soft point of the polygon, which then would turn into a hard point of the polygon"

# Solution, Implementation

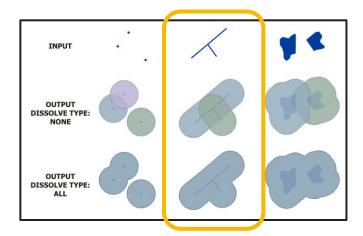
[Polygon Automation]



# LESSON LEARNED [WEEK 4]

Challenge	Need to Improve
<ul> <li>Extract the coordinate points of a driving route from My Maps in KML file format.</li> </ul>	<ul> <li>Adding a buffer along the coordinate points. (□)</li> </ul>

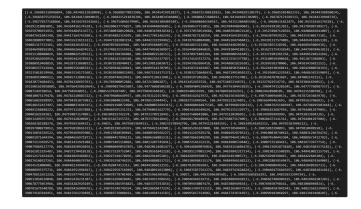
## **Buffer:**



## IMPLEMENTATION [WEEK 5]



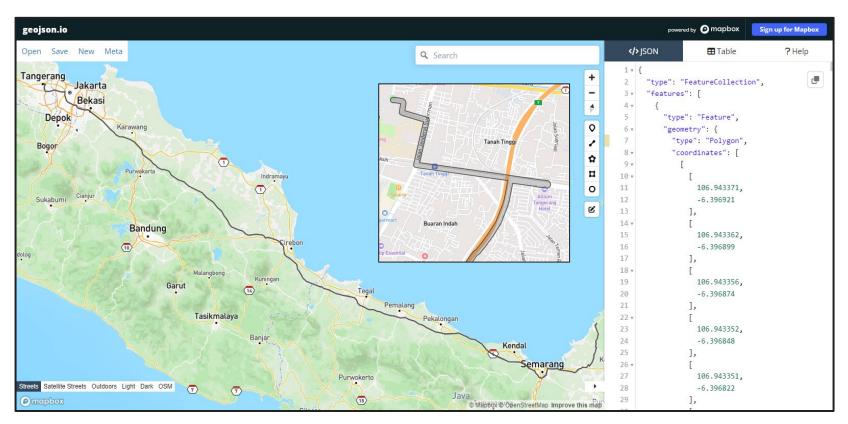
- Driving Route
- Buffer



# LESSON LEARNED [WEEK 5]

Challenge	Need to Improve
<ul> <li>The output still comprises individual points representing the polygon.</li> </ul>	<ul> <li>Connecting the points to form a polygon. (□)</li> </ul>

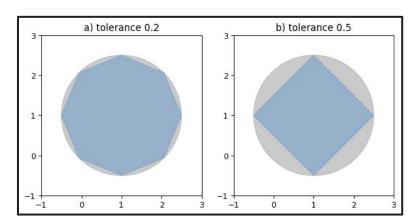
## IMPLEMENTATION [WEEK 5]



## LESSON LEARNED [WEEK 7]

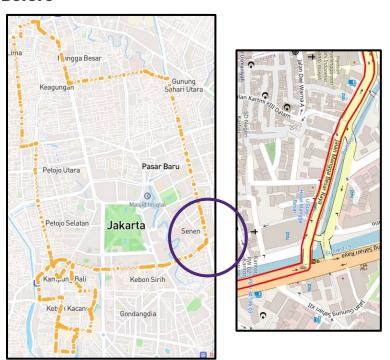
Challenge	Need to Improve
<ul> <li>The GeoJSON output is too large due to the detailed coordinates of the polygon.</li> </ul>	<ul> <li>Simplifying the coordinate points of the polygon. (□)</li> </ul>

### **Douglas-Peucker algorithm**:

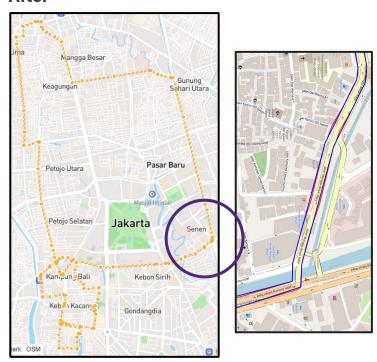


## **IMPLEMENTATION** [WEEK 8]

### **Before**



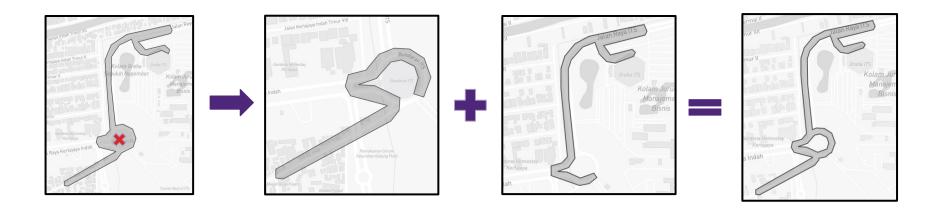
#### **After**



Polygon's Coordinate

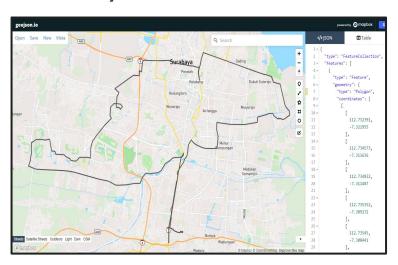
## LESSON LEARNED [WEEK 9]

Challenge	Need to Improve
<ul> <li>Intersecting routes need to be divided into separate KML files.</li> </ul>	<ul> <li>Adding a script for merging polygon from multiple GeoJSON files (□)</li> </ul>

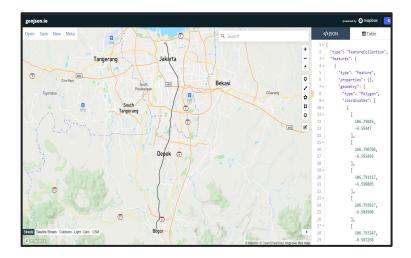


### **FINAL OUTPUT**

### Car, Motorcycle Route



### **Commuterline Route**



# Conclusion

[Polygon Automation]



## **Conclusion**

The algorithm succeeded in improving time efficiency.

IPython Notebook		
Polygon Automation	Merge Polygon	

# **Thank You**



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