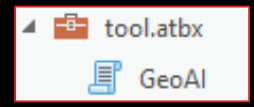
GEOAI



Made by:

medad hoze

Special thanks:

1) Yovav sendars
2) Yosef barda
3) Prof Yaron felus

THE GOAL:

USING GIS TOOLS AND ALGORITHMS BY WRITING NATURAL LANGUAGE (NLP)

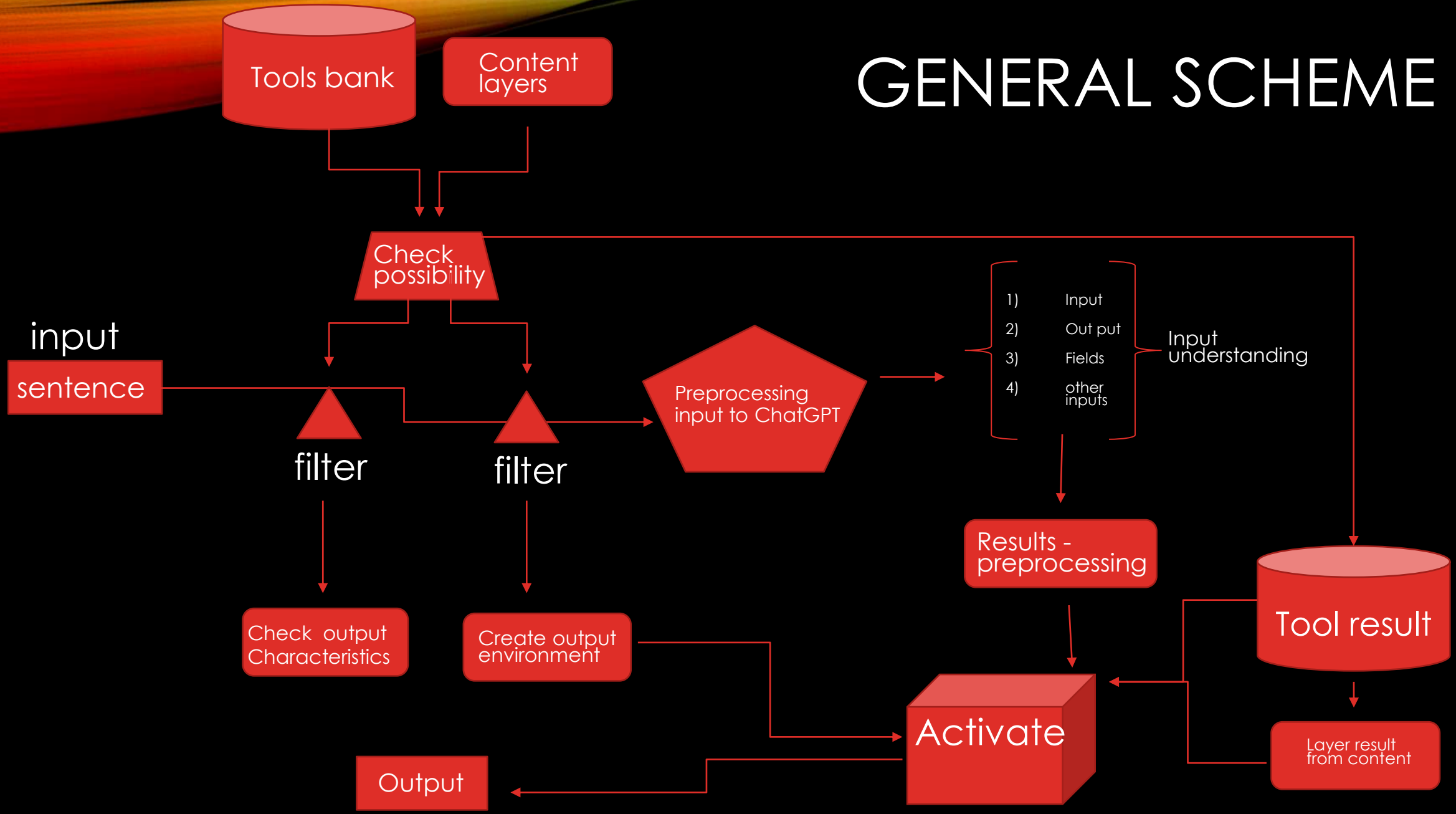
OPENAI API

NLP – (Natural language processing) algorithms becoming a powerful tool, and for the time been, not used in full force helping us improve and ease GIS operations.

```
import os
import openai

openai.api_key = os.getenv("OPENAI_API_KEY")

response = openai.Completion.create(
  model="text-davinci-003",
  prompt="Find Haifa, find input output,  arcpy",
  top_p=1,
  presence_penalty=0.9,
)
```

https://platform.openai.com/examples

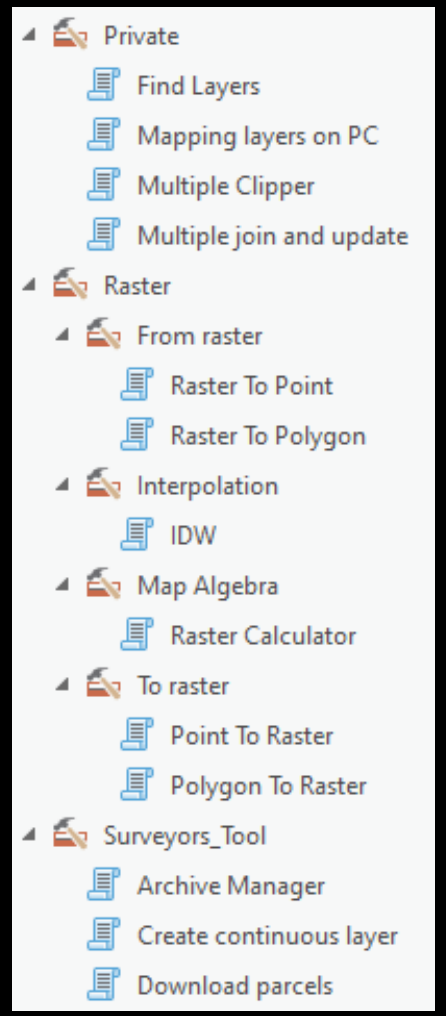
GENERAL SCHEME

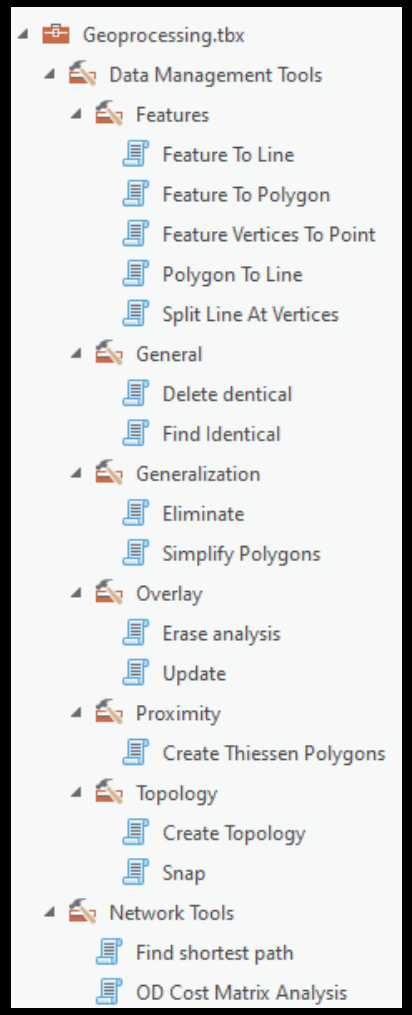


WORKING ON SELF CREATED TOOLS – AVOIDING ESRI EXPANSIVE LICENSES

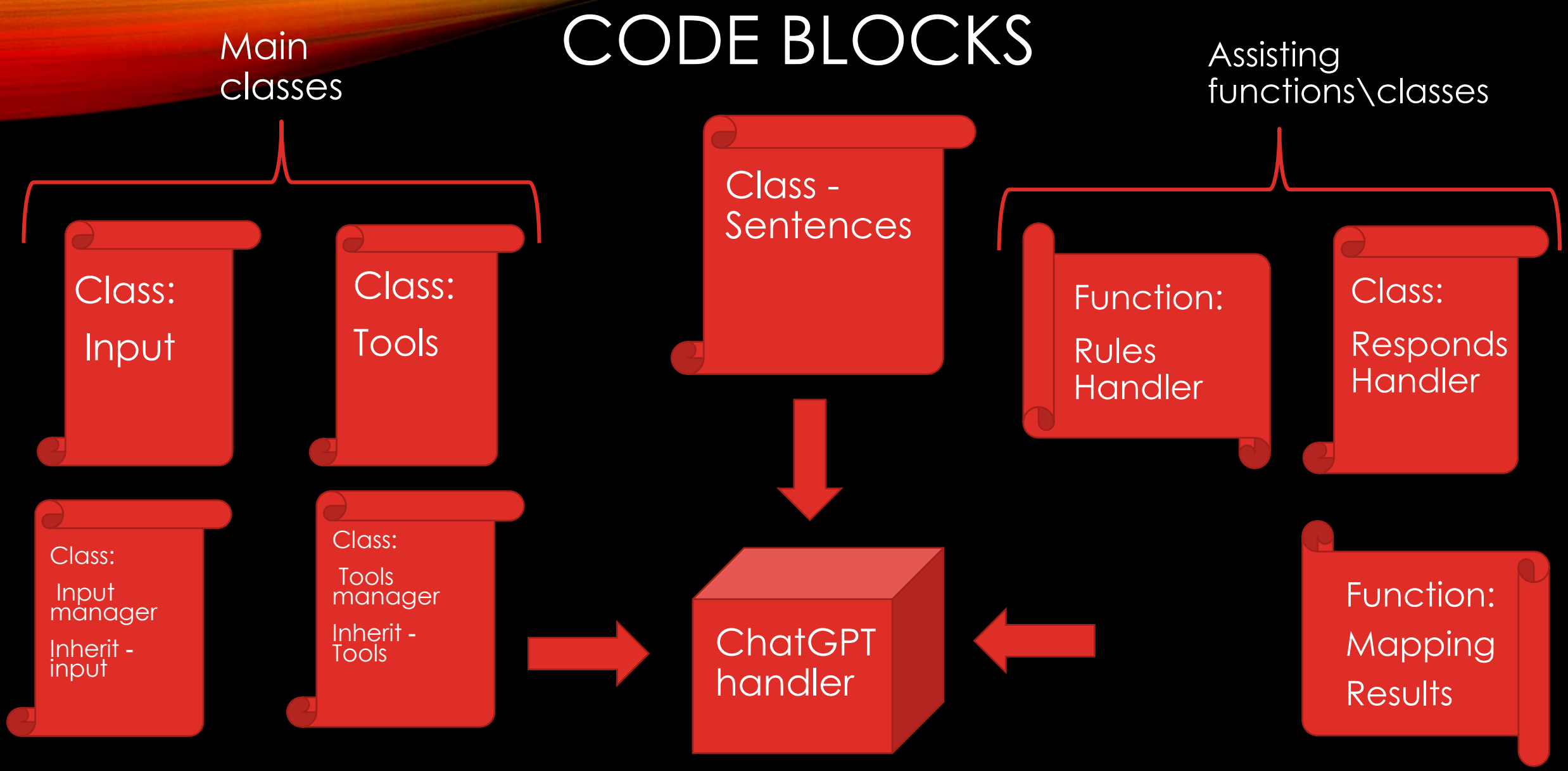
The GeoAI tool using bank of 29 geo-processing self made tools, 22 of these tools are similar to the standard and advanced esri tools, and 7 are made specific for the GeoAI tool. Additionally, GeoAI uses 5 basic licensee tools.

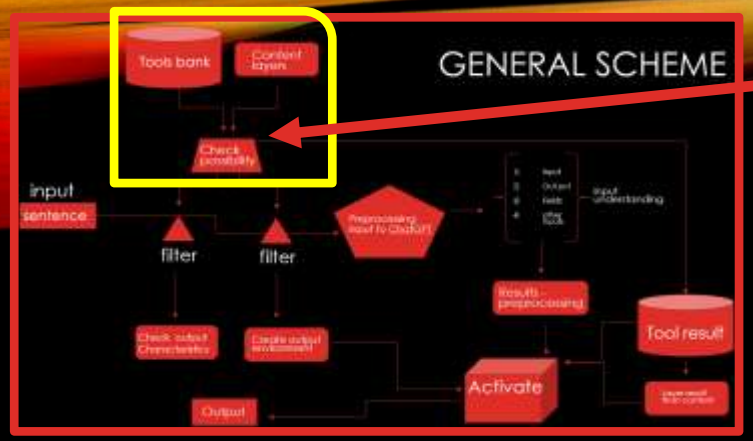
To use GeoAI, all u need is basic ArcPro license



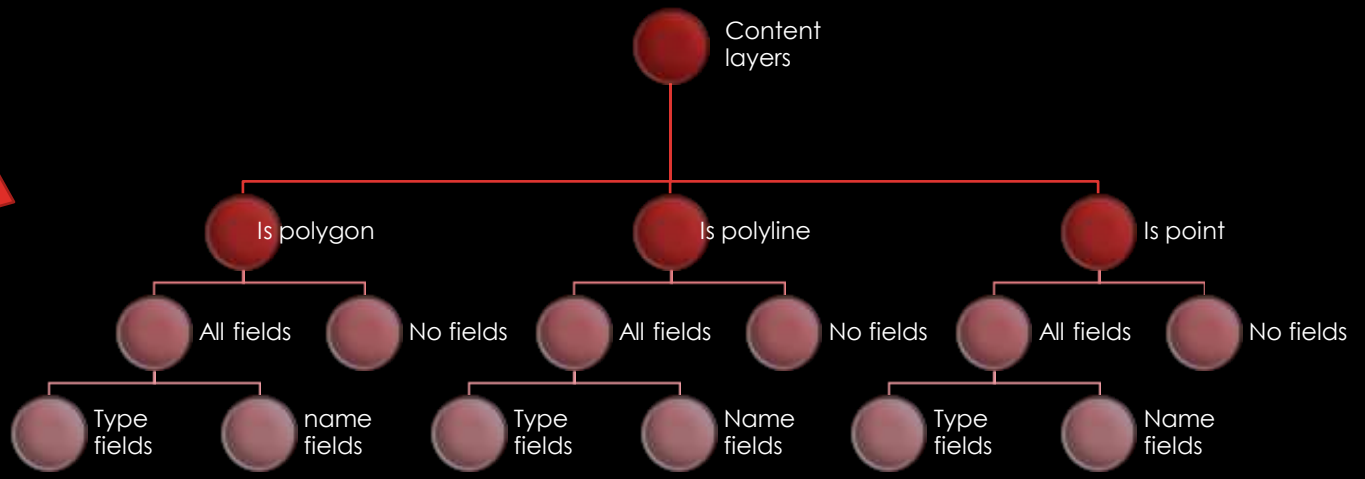


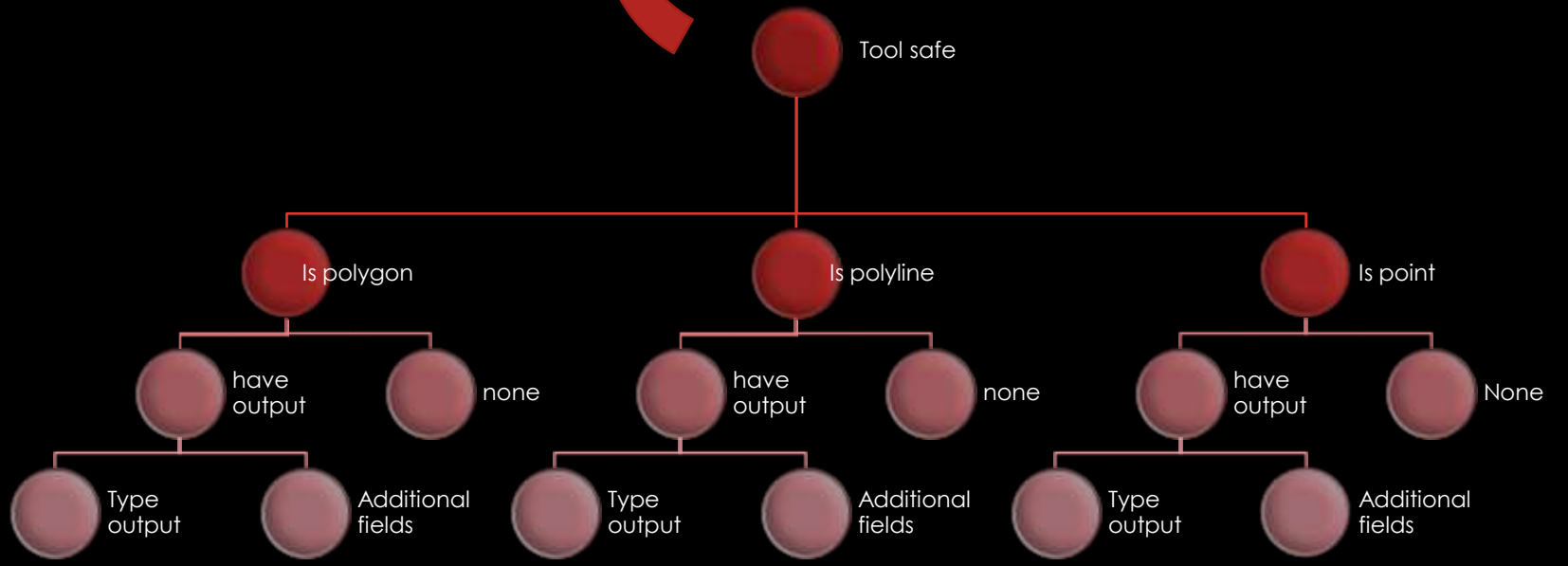
CODE BLOCKS

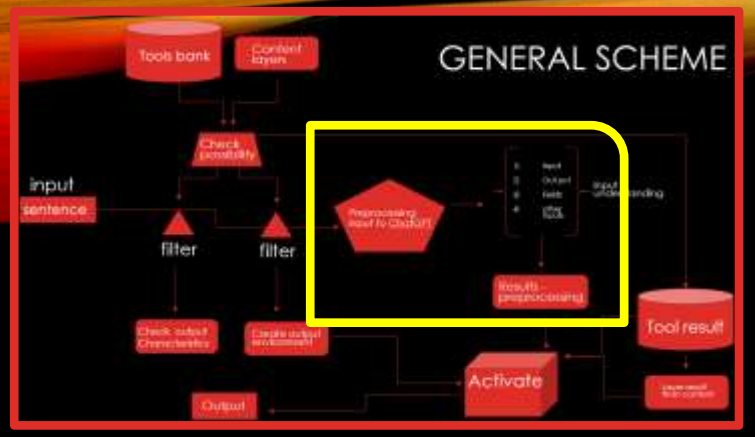

Main classes
Assisting functions\classes
Class: Input
Class: Tools
Class - Sentences
Function: Rules Handler
Class: Responds Handler
Class: Input manager
Inherit - input
Class: Tools manager
Inherit - Tools
ChatGPT handler
Function: Mapping Results



Check possibility

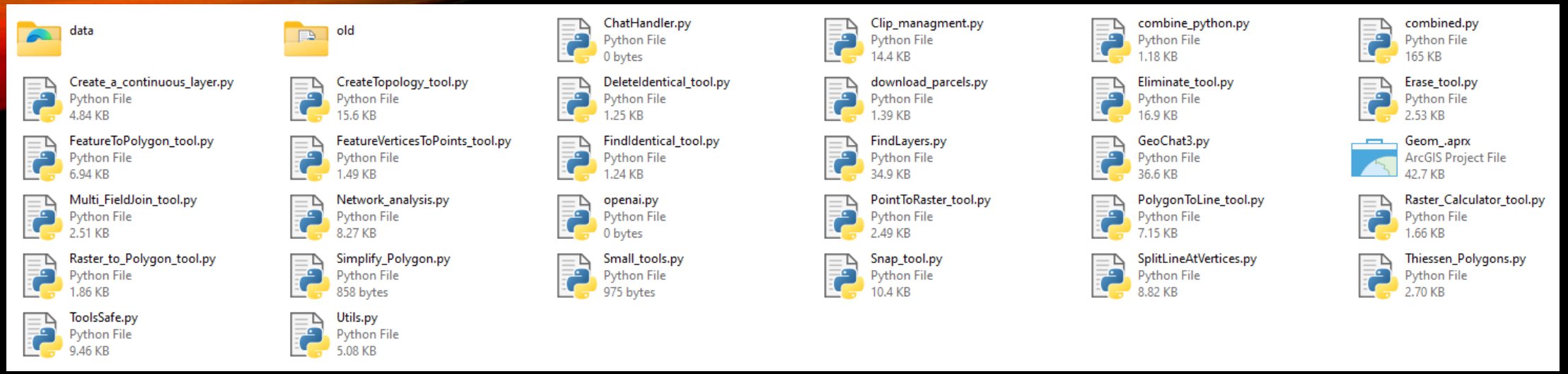






PREPROCESSING CHATGPT

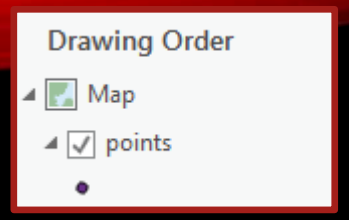
- Get Token (randomly from stack)
- Insert suffix (input, output, arcpy)
- Extract sentence

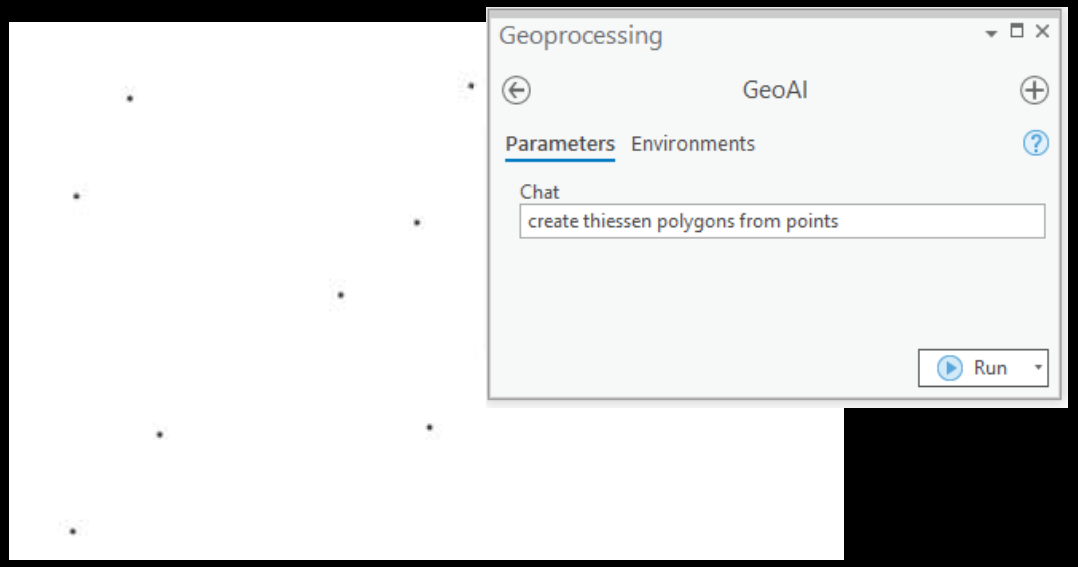


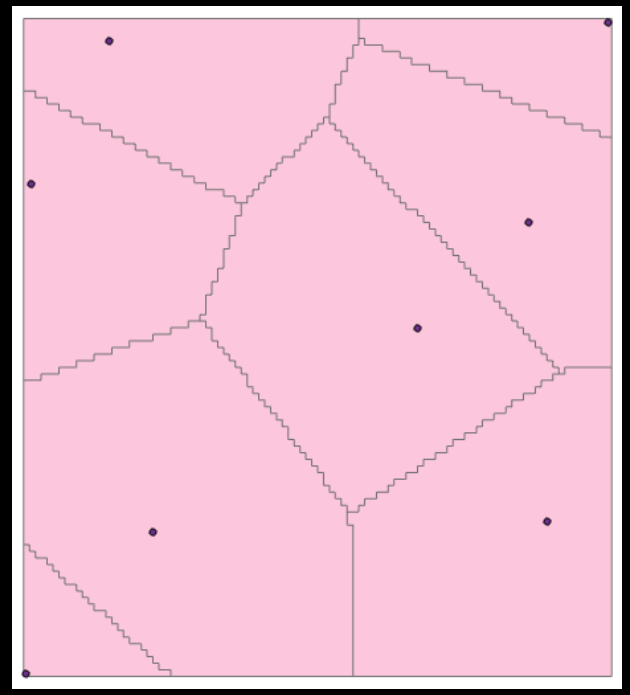

```
import arcpy


from DeleteIdentical_tool          import Delete_Identical_Byfield
from PolygonToLine_tool            import PolygonToLine
from Erase_tool                    import analysis_Erase
from CreateTopology_tool           import CreateTopology
from FeatureVerticesToPoints_tool  import FeatureVerticesToPoints
from Snap_tool                     import Snap
from Eliminate_tool                import Eliminate
from FindIdentical_tool            import Find_Identical_Byfield
from Simplify_Polygon              import Simplify_Polygons
from SplitLineAtVertices           import Split_Line_By_Vertex_tool
from FeatureToPolygon_tool         import Feature_to_polygon
from FindLayers                    import find_layers_main,data_SETL
from Clip_managment                import multiClip
from Raster_to_Polygon_tool        import RasterToPolygon
from Multi_FieldJoin_tool          import join_field
from PointToRaster_tool            import Rasrize_point
from Raster_Calculator_tool        import Raster_Calculator_tool
from Create_a_continuous_layer     import create_compilation
from download_parcels              import download_parcels_data
from Network_analysis              import find_shortest_path
from Small_tools                   import insert_random_number_to_layer
from Thiessen_Polygons             import create_thiessen_polygon
```

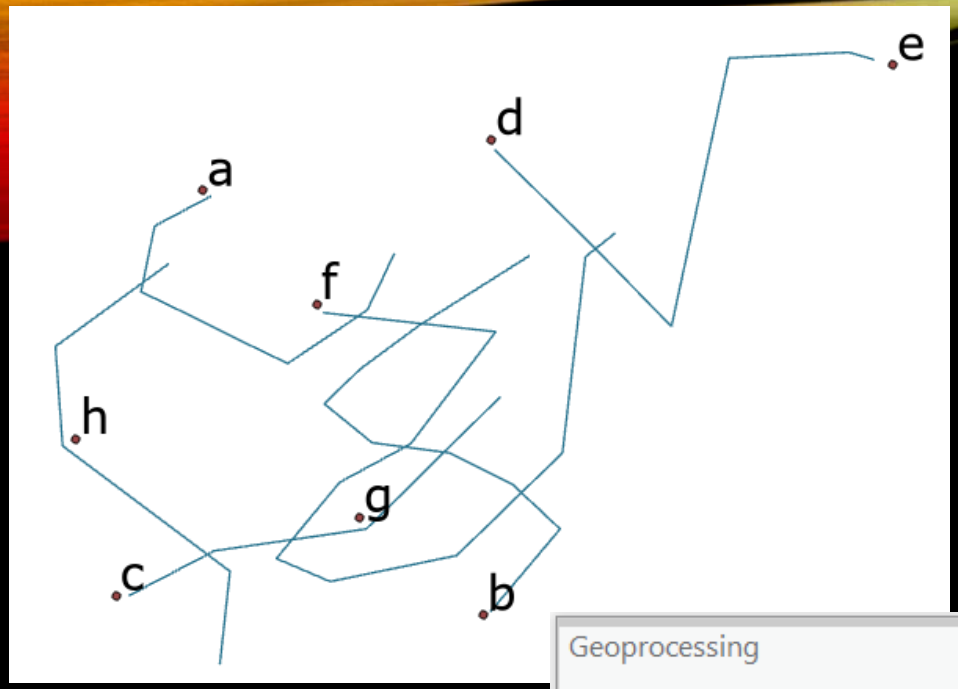
SCRIPTS PARTICIPANTS

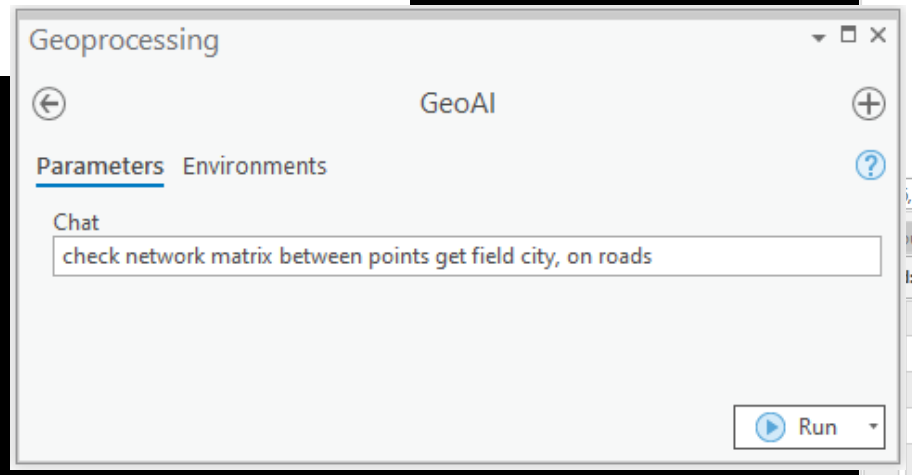
EXAMPLE

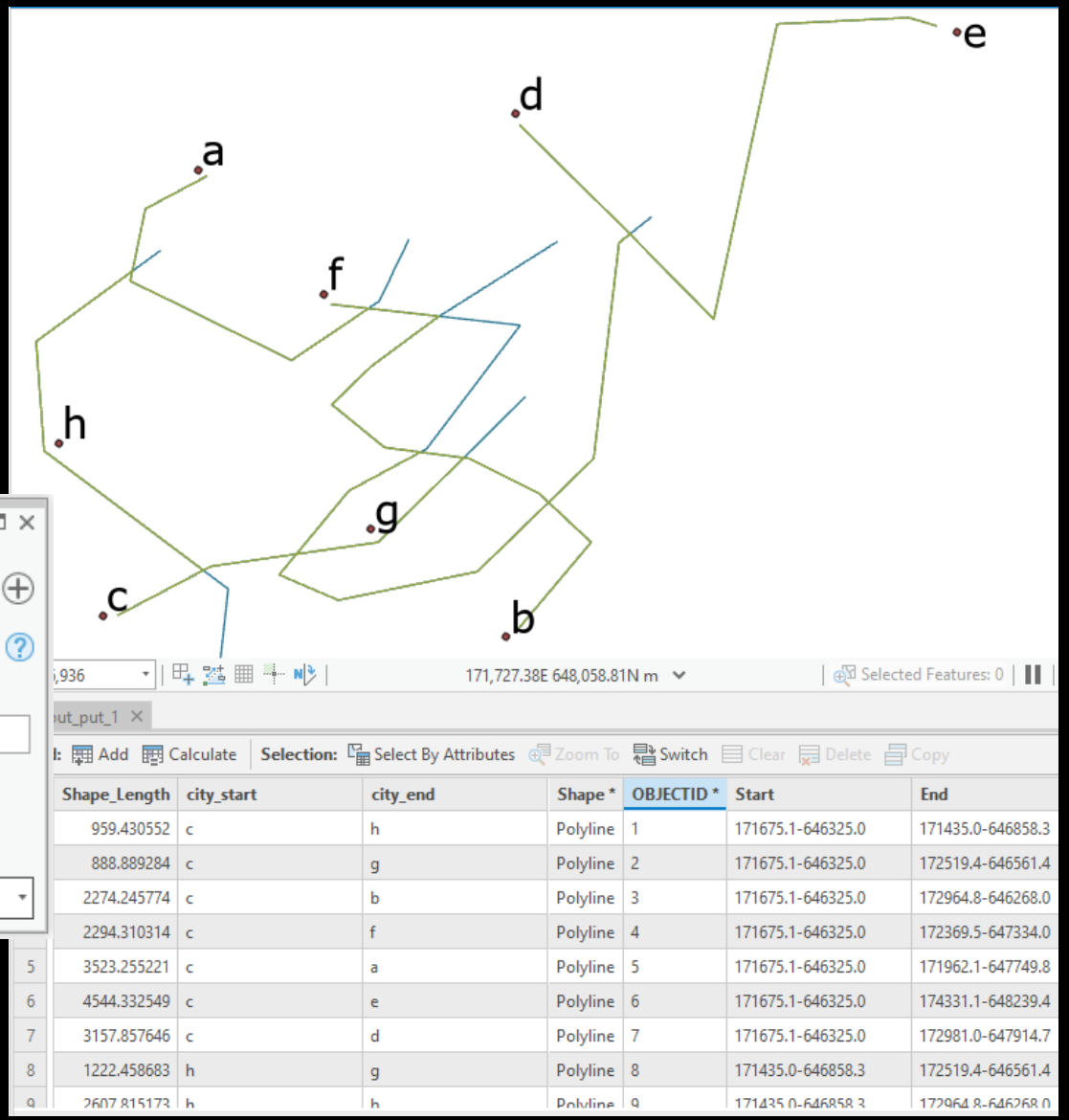

Drawing Order
Map
points


Geoprocessing
GeoAI
Parameters
Environments
Chat
create thiessen polygons from points
Run









	Shape_Length	city_start	city_end	Shape *	OBJECTID *	Start	End
	959.430552	c	h	Polyline	1	171675.1-646325.0	171435.0-646858.3
	888.889284	c	g	Polyline	2	171675.1-646325.0	172519.4-646561.4
	2274.245774	c	b	Polyline	3	171675.1-646325.0	172964.8-646268.0
	2294.310314	c	f	Polyline	4	171675.1-646325.0	172369.5-647334.0
5	3523.255221	c	a	Polyline	5	171675.1-646325.0	171962.1-647749.8
6	4544.332549	c	e	Polyline	6	171675.1-646325.0	174331.1-648239.4
7	3157.857646	c	d	Polyline	7	171675.1-646325.0	172981.0-647914.7
8	1222.458683	h	g	Polyline	8	171435.0-646858.3	172519.4-646561.4
9	2607.815173	h	h	Polyline	9	171435.0-646858.3	172964.8-646268.0

NETWORK ANALYSIS WAS NEVER THAT SIMPLE

WHAT NEXT ?

Creating NLP model especially for the purpose of combine multi processing in a single command, thus create an entire tools from NLP commands, the tools will be added to model by inputting a sentence, for example:

Next level:

“create tool that take polygon and line, convert to points and create polygon from these points”

LINK TO VIDEOS

1) https://www.youtube.com/watch?v=pF17FTzHR68

2) https://www.youtube.com/watch?v=aVM_rvNoqvk

END