

Route Optimization with Suitability Modelling (Lab 3 - Part 1)

GIS 5571: ArcGIS I
University of Minnesota

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NOTE: The workflow in this notebook is essentially the same exact workflow as the one I created in lab 2 (part 2), since I already added the functionality to iteratively test different weights in my model. For the purposes of this lab, I removed much of the preprocessing that went into preparing the data and also only created three different cost surfaces, rather than 10 as I did previously.

The more exhaustive workflow that was previously created can be found in the lab's repo [here](#).

In [1]: `import arcpy`

In [2]: `from arcpy import env
env.scratchWorkspace = env.scratchFolder
env.workspace = env.scratchWorkspace`

Reclassify Data and Run Model (Processed and Cleaned in Lab 2)

In [3]: `# Reclassify Landcover
lc_reclass = arcpy.sa.Reclassify("landcover_aoi", "Value", "1 100 5;101 2;102 2;103 2;104 3;105 2;106 3;107 3;108 4;109 1;110 1", "DATA")`

In [4]: `# Reclassify Slope
slope_reclass = arcpy.sa.Reclassify("slope", "VALUE", "0 2.084853 5;2.084853 3.822231 4;3.822231 6.602035 3;6.602035 18.416204 2;18.416204 88.606262 1", "DATA")`

In [5]: `# Create Three Cost Surfaces to Test Different Model Weights
for i in [0.1, 0.5, 0.9]:
 # Set Weights
 slope_w_rnd = round(i, 1)
 landcover_w_rnd = round((1 - i), 1)

 # Calculate Cost and Save as New Raster
 cost = (((arcpy.Raster(slope_reclass) * slope_w_rnd) + (arcpy.Raster(lc_reclass) * landcover_w_rnd)) * -1) + 6)

 # Create Cost Path
 cPath_name = fr"cPath_{str(slope_w_rnd)[2:3]}s_{str(landcover_w_rnd)[2:3]}lc"
 cPath = arcpy.sa.OptimalRegionConnections("origin_destination", cPath_name, in_cost_raster = cost)`