Draft – more to be added/removed later

CMPS 4553/5993 Topics: Computational Methods
Study Guide Test 1 **EXAM Thursday, Nov. 11th**

Read/Study

Data Science Essentials Chapters 6 and 7
Slides
Homework assignments
Project 3
In-class work on merged dataframes and graphs
Notes from Guest Speakers : Griffin and Johnson and Passos

Format:

Multiple choice
Fill-in blank
Tracing code
Writing code snippets

Concepts:

Big data
Obfuscate
Geofencing
Tree vs graph
AWS
Clustering
Spatial data
Quad Trees
Block Chain
Tools for Spatial Data
Mining
Nan
Index
Merge vs concatenate
Discretize
Rank
Inplace
Series
Dataframe
Pandas
Groupby
.to_csb
Network
networKit
sort_index
sort_values
pandas cut
density
simple graph
directed graph
multigraph
degree
walk
path
circuit
connected component
clique
community
clustering
centrality
computational
epidemiology
disease modeling methods
disease modeling tools
SIR model
Graphviz
Unity3D
Netlogo
XLS
mathplotlib
Pyplot
Histogram
Scatter graph
Scatter matrix
Line graph
Graph embellishments
Incremental plotting
Simlulate
DES
Validation
“what-if”

Know:

- Tools for Spatial Data Mining

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- File formats for Spatial Data Mining
- Open a csv file directly into a data frame
- Merge 2 dataframes on an index or column
- Drop a column
- Total all rows in dataframe, save in new column
- Sort a dataframe on index or column
- Set index name
- Get a cross section of a dataframe
- Apply rules to a cellular automata
- Create a graph/add nodes & edges
- Graph functions: len(), nodes(), edges(), neighbors(), degree()
- Change node attributes & edge attributes
- Identify cliques
- Determine nodes with high centrality
- Know different types of plots
- Know the advantages of plotting data
- Know what discrete event simulation (DES) is and what it is not
- Know advantages and disadvantages of DES
- Know some applications of DES