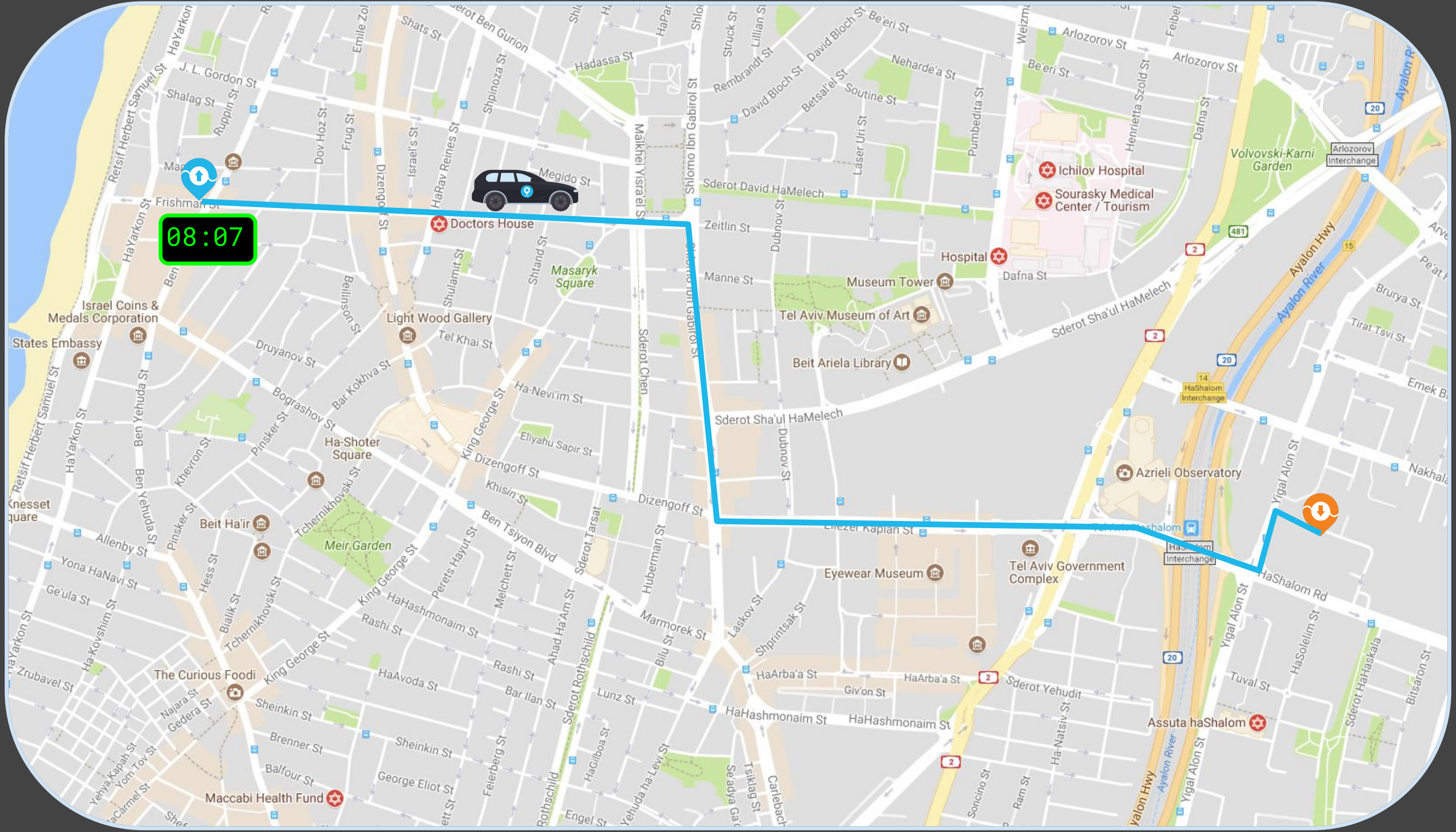
Offline Solutions to Online Problems

Dalya Gartzman

via

What does it mean?



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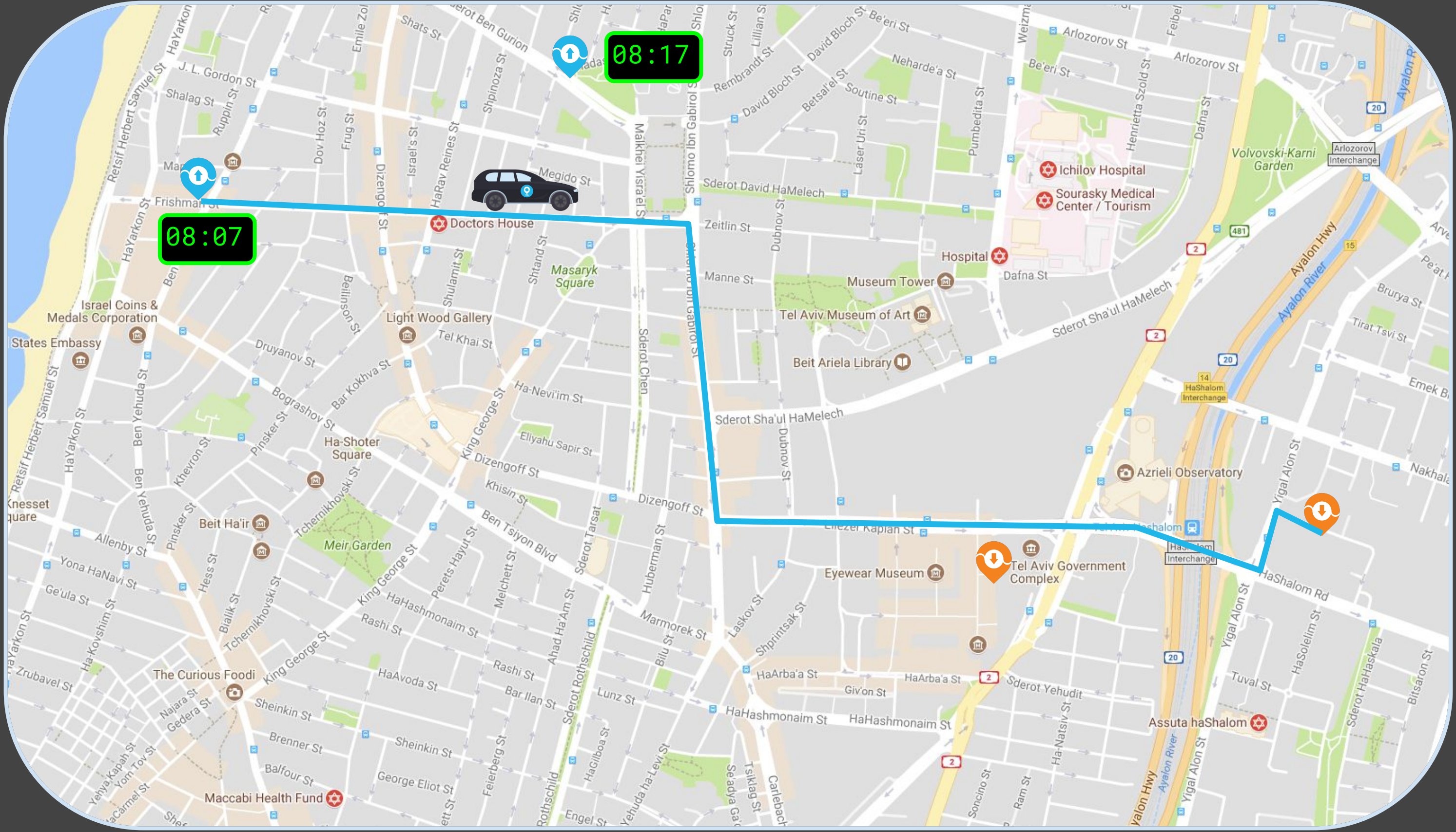

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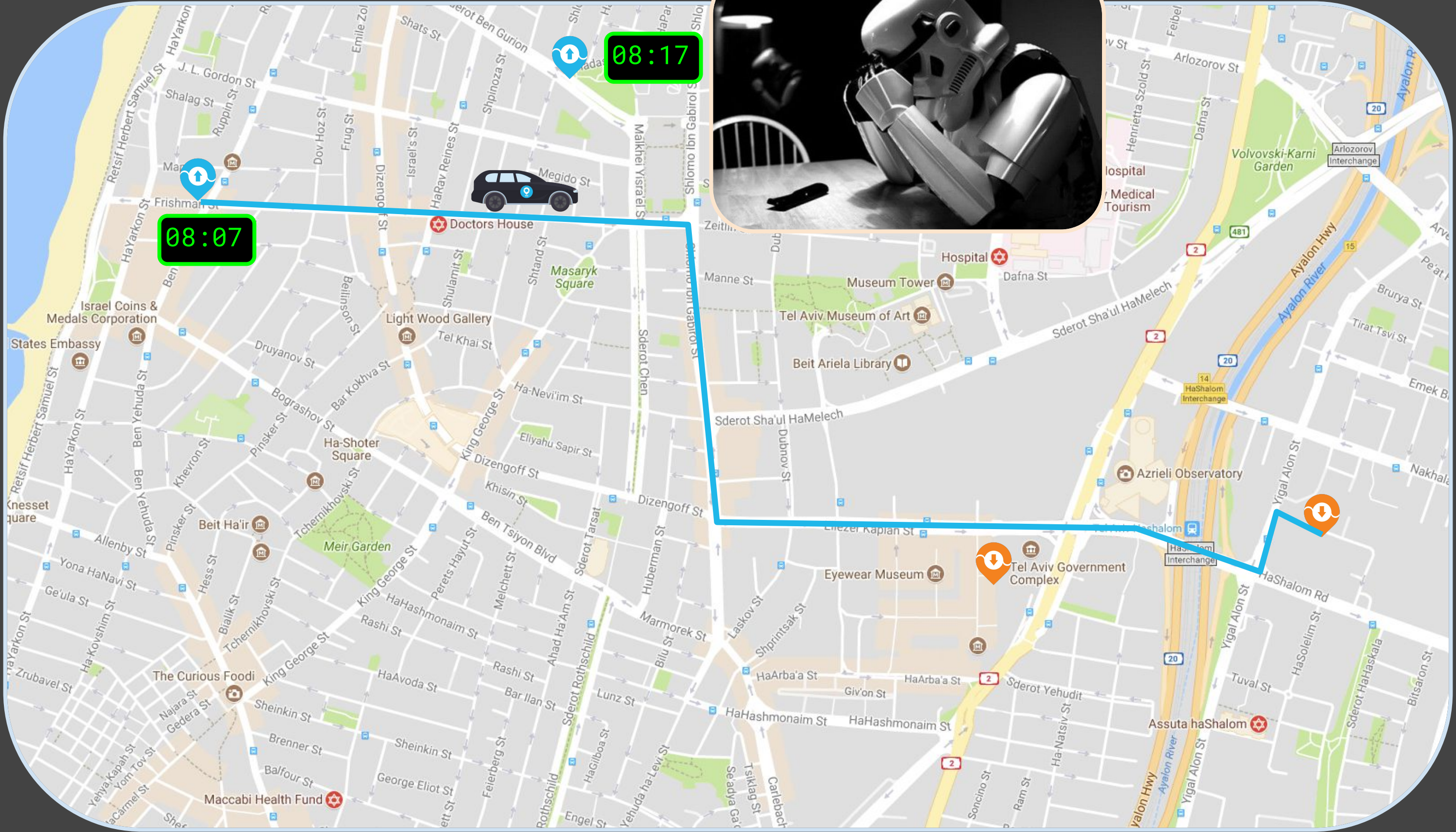

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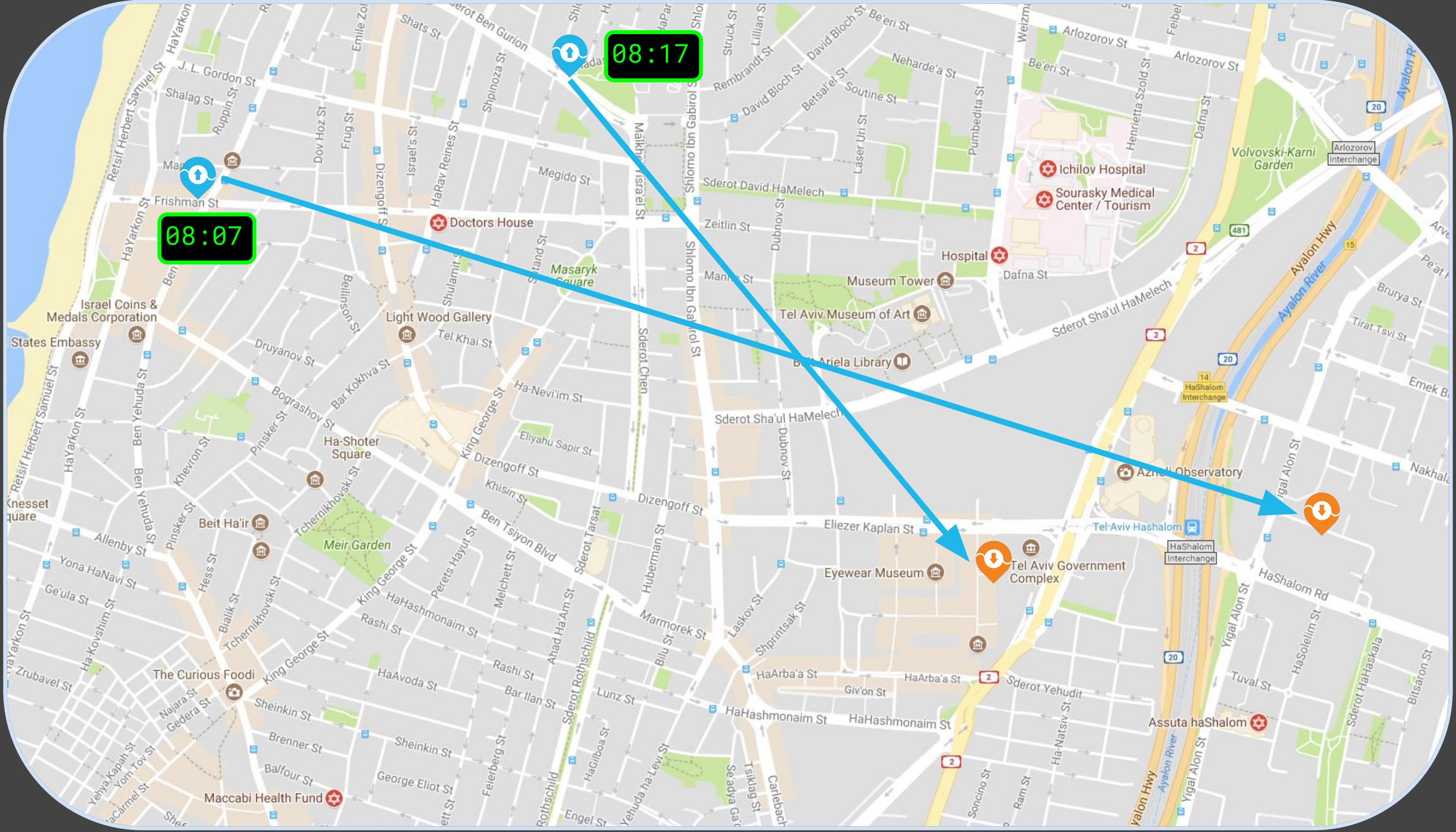

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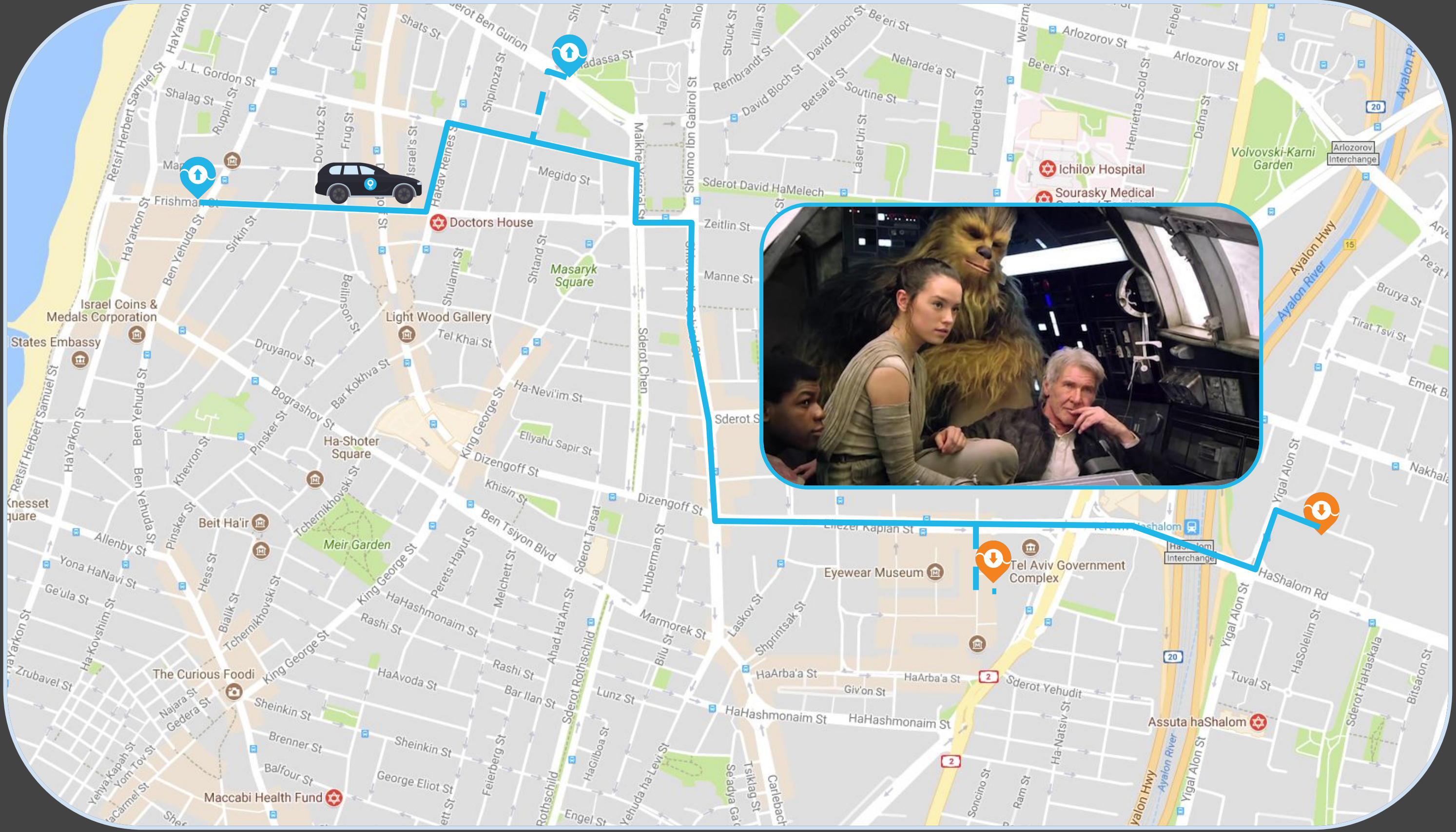
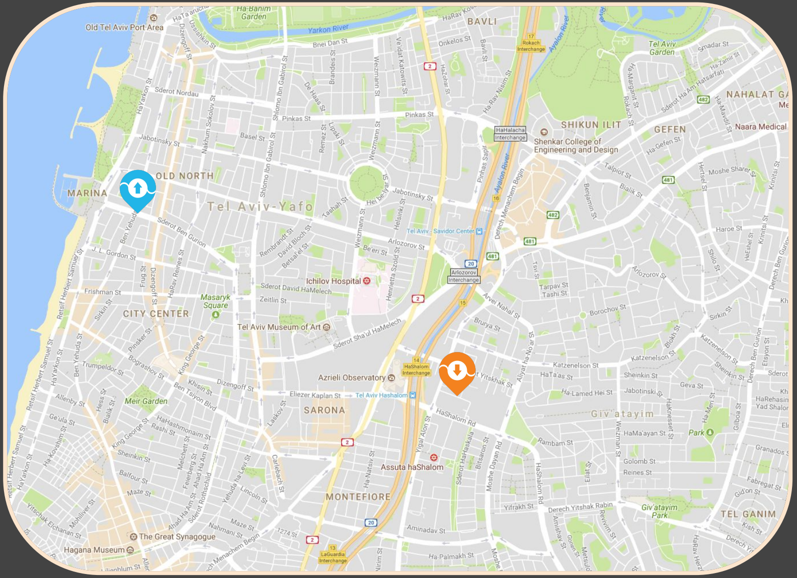
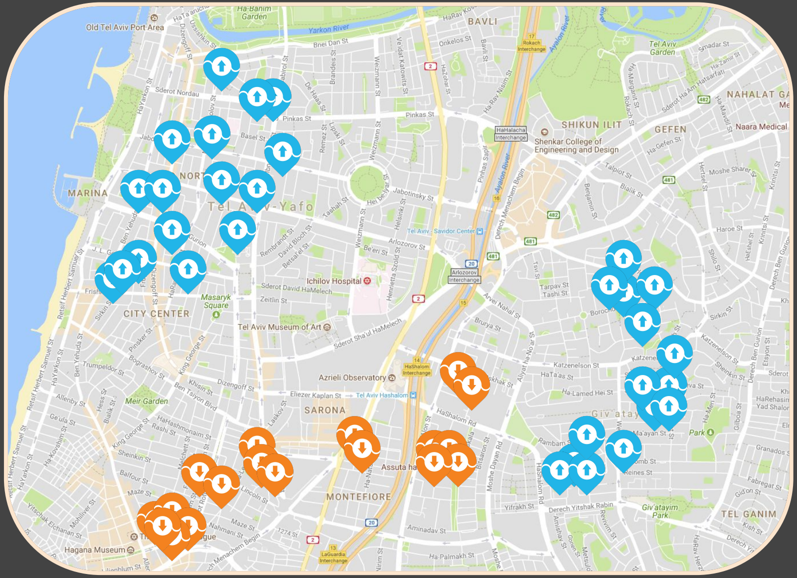


Our Motivation

online problem - individual actions

offline solution - smarter decisions





networkx

```
import networkx as nx

def BuildGraph(requests, vans):
   G = nx.Graph()

   # build left side
   G.add_nodes_from([ (r.name, {‘data’:r.data}) for r in requests ])

   # build middle side
   G.add_nodes_from([ (c.name, {‘data’:c.data})
                      for c in GetClusters(requests) ])
   G.add_edges_from([ (r, c) for r,c in requests,clusters])

   # build right side
   G.add_nodes_from([ (v.name, {‘data’:v.data}) for v in vans ])
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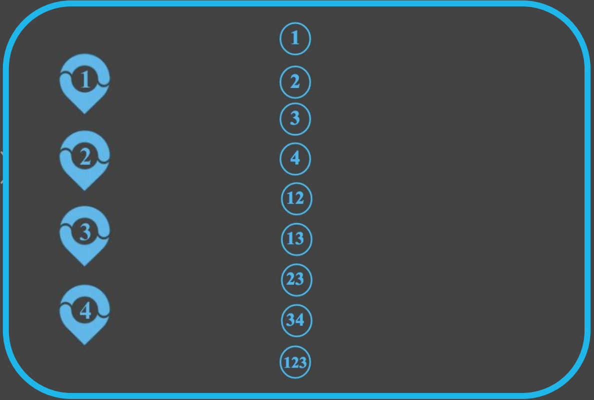

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   # build right side
   G.add_nodes_from(
         [ (v.name, {'data':v.data})
          for v in vans ])
   G.add_edges_from([(c,v) for c,v in (middle_layer), vans
                           if CanVanTakeClique(v,c)])
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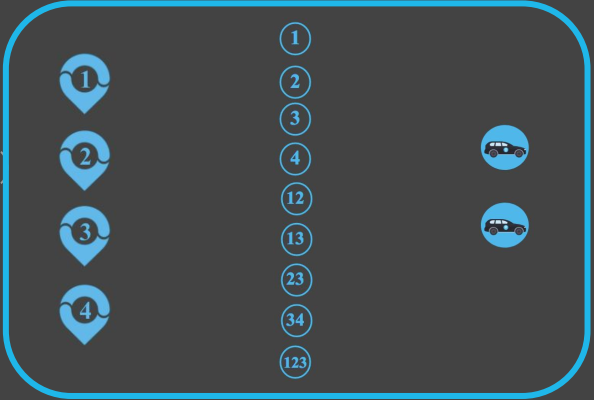

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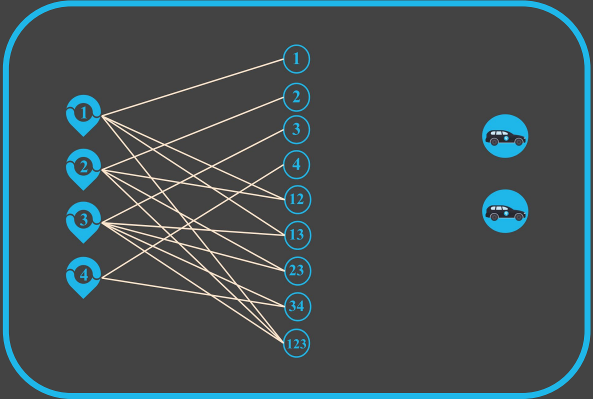

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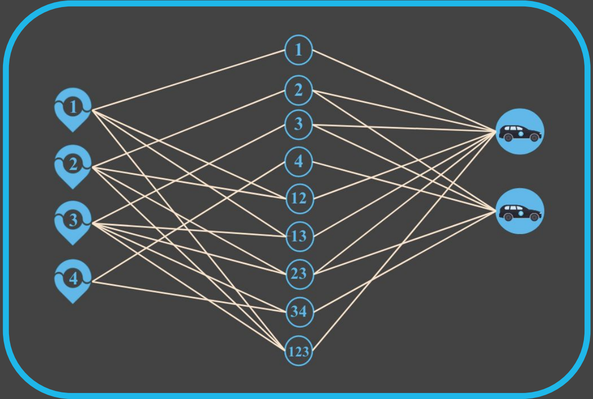

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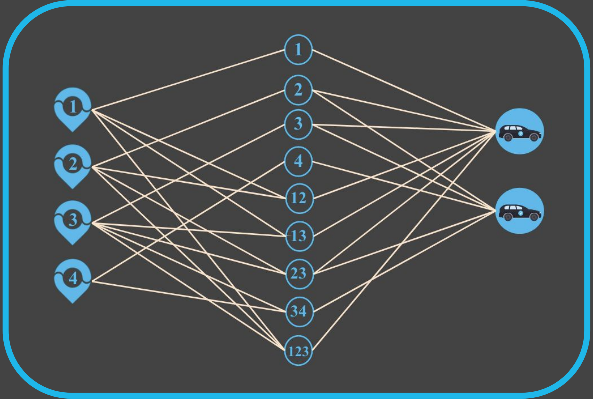

G.draw()

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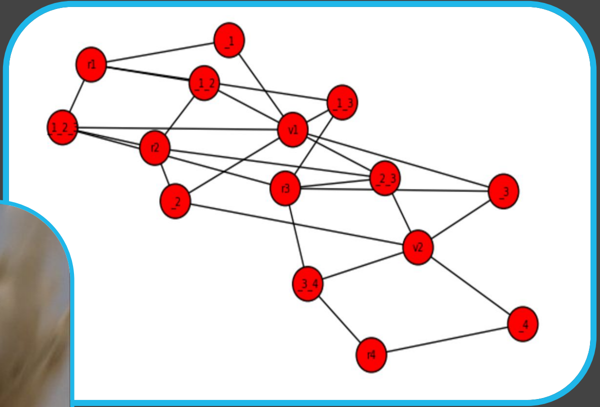

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   # build right side
   G.add_nodes_from([ (v.name, {'data':v.data}) for v in vans ])
   G.add_edges_from([(c,v) for c,v in clusters, vans
                          if CanVanTakeCluster(v,c)])
   # define position for draw
   pos =
   {r.name: [0,idx]
   for idx,r in enumerate(requests)} + \
   { c.name: [1,idx] for idx,c in enumerate(GetClusters(G))} + \
   { v.name: [2,idx] for idx,v in enumerate(vans)}
   nx.draw(G,pos)
   return G
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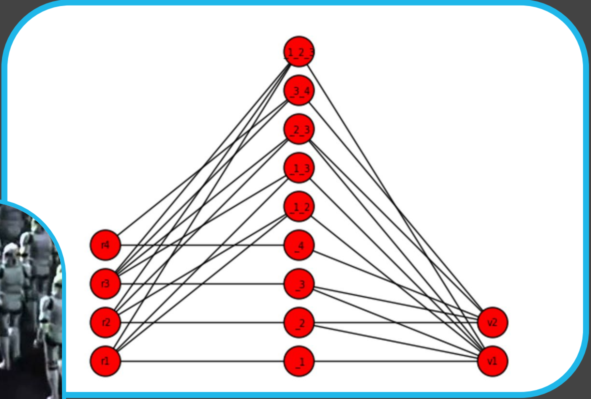

networkx

1. List [comprehension]
2. Helper functions for logical structure
3. Use “pos” for easy drawing