

FX LEGEND

planned  
completed  
outdated  
very outdated

POPULATION

fx: update\_choices

PERSON

orig, dest

Trip opts:

(choose from)

- [drive]
- [ondemand]
- [walk,transit,walk]
- [walk,transit,ondemand]
- [ondemand,transit,walk]
- [ondemand,transit,ondemand]
- [drive,transit,walk]
- [drive,transit,ondemand]

Delivery

- Direct
- shuttle

Preference Factors

Relative pt & weight factor

- time
- money
- switching
- convenience
- (other)

fx: generateIndividual  
makeTrip  
queryTrip  
querySeg

.....

DELIVERIES

DIRECT

- loc
- all possible passengers
- active passengers
- current path
- cost info

SHUTTLE

- loc
- transit stops
- all possible passengers
- active passengers
- current path
- cost info

fx: generateDeliveries  
kmeans\_nodes

WORLD

fx: world\_of\_drive  
world\_of\_walk  
world\_of\_ondemand  
world\_of\_gtfs  
world\_of\_transit\_graph

generateNetwork

DRIVE NETWORK

Trip Segments (many)

- (sources,target) edge flows,
- costs edge costs

Algorithm: Dijkstra, A\*

WALK NETWORK (same as DRIVE)

fx: planDijkstraSeg

TRANSIT NETWORK

Trip Segments

- (sources,target) edge flows,
- costs edge costs

Algorithm: RAPTOR

fx: planGTFSSeg  
raptor\_shortest\_path  
get\_trip\_ids\_for\_stop  
get\_trip\_profile  
stop\_times\_for\_kth\_trip  
compute\_footpath\_transfers

-----  
get\_trip\_lists  
create\_chains  
list\_inbetween\_stops

ONDEMAND NETWORK

Trip Segments (many)

- (sources,target) edge flows,
- costs edge costs

Algorithm:  
divideTrips, orderTrip, TSP

fx: planDelivSegs  
divideDelivSegs  
kmeans\_nodes  
segment\_pickups  
current\_pickups  
next\_node  
order\_pickups

GRAPHS

GRAPHS

osmnx,networkx

- drive
- walk
- ondemand
- transit (graph)

gtfs feed (partridge, peartree)

- transit

fx: createEdgeCosts  
removeMassFromEdges  
addTripMassToEdges

NODES

NODE DATAFRAME

- drive
- walk
- ondemand
- transit (graph)
- gtfs

Implemented: pandas

fx: nearest\_nodes  
convertNode  
findNode  
find\_closest\_node  
createEmptyNodesDF  
addNodeToDF  
-----  
gtfs\_to\_transit\_nodesNedges  
updateNodesDF  
drop\_duplicates

bus\_stop\_nodes  
bus\_stop\_nodes\_wgraph  
bus\_connection\_nodes