

Inputs

U UAVs | G GNs
MIMO-enabled GNs
MIMO-capable UAVs
UAVs start at depot node
Random deployment of GNs
Deployment grid tessellation

Naive K-Means Clustering

C clusters of GNs

ZF Beam-Forming & Two-Stage Grid Search

Optimal service voxel per cluster

Forge Initialization
Cluster on GNs' Proximity

A2G Channel Model

Graph overlaid over the site
Optimal service voxels are *vertices*
Paths connecting these vertices are *edges*

Outputs

mTSP Branch-and-Bound

3D trajectories for all *edges*

LCSO Trajectory Design

Successive Node Insertion Initialization
Separation & Branching Rules

UAV 3D Mobility Energy Model

Optimal UAV serving position per cluster
Optimal beam-forming design at each serving position
Optimal scheduling/association of GN requests
Energy-conscious 3D trajectories of the UAVs