PROJECT TITLE: Vehicle Routing and Localization Infrastructure Placement in GPS-denied Areas

Physical Requirement: No such requirements


Rajnikant Sharma, 
Aerospace Engineering and Engineering Mechanics 
College of Engineering and Applied Sciences 
727 Rhodes Hall 
Cincinnati, OH 45221 
sharmar7@ucmail.uc.edu

**Project Description**

Autonomous vehicles like flying cars, orbs, and a wide variety of unmanned aircraft systems (UAS) are expected to be deployed within the next few years for many applications including but not limited to air-taxis, last-mile package delivery and so on. These vehicles are desired to be equipped with autonomous guidance and navigation systems to reduce human intervention and maximize operational efficiency and resource utilization. The performance of the autonomous navigation systems on such platforms is heavily reliant on the availability and the accuracy of the GPS devices that allows vehicles to localize themselves using satellite signals. GPS signal is, however, subject to a multitude of potential degradations such as path-loss (foliage or indoor environment), multipath errors (urban canyon or in buildings), and interferences (intentionally or unintentional). Fortunately, there are alternate methods than can be deployed on UAS for localizing themselves without GPS. However, these feature-based navigation systems do not provide any localization guarantees related to mission accuracy. UtopiaCompression Corporation along with University of Cincinnati will develop a feature-based path-planning and navigation solution that can provide mission accuracy.