

# Path Planning for Multiple Aerial Vehicles

## Master Thesis Proposal in Automatic Control



UAVs' path planning has been widely investigated in the research community, where the main idea is to find the optimum path from the origin to the destination, while avoiding collisions with obstacles and meeting the UAV performance constraints. We aim to develop path planner for group of UAVs (model base/model free approaches) for the unknown or partly known environment.

- The main aim is to consider 3D environment and implement path planner for unknown environment in order to cover the area.
  - The machine learning techniques such as reinforcement Learning is suggested for the unknown environment but not obligatory.
  - The require sensors can be installed on the UAVs.
- The path planner should be online or partly offline.
- The project needs a good end demonstration with multiple UAVs and the participant should finally test her/his algorithm on real experiment.
- Knowledge in machine learning techniques is a plus, but not needed.
- The participant has a weekly discussion with her/his supervisor in order to be guided.
- For the simulations, MATLAB and Python can be used but for the experiment C++ is suggested. Finally, the method should be implemented in ROS in order to be validated and directly placed to the real platform for experiments.

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