



## Master Thesis:

### Design and Development of an Urban Air Traffic Flow Management Module for Deconfliction

#### Task-Description:

New air-taxi prototypes promise fast urban transport solutions. The European U-Space and DACUS published a conceptual framework of roles and responsibilities for providing safe operations in an unmanned airspace. When flights are planned without consideration of minimum separation, conflicts between flights arise. The Institute of Air Transportation Systems developed a toolchain for managing daily urban air traffic which provides 4D trajectories, between which conflicts are detected. This thesis should design an integrated tool that resolves conflicts between planned flights by e.g. allocating delays. Moreover, flights should be managed to comply with capacity restrictions of e.g. vertiports, routes and sectors. Results should be evaluated regarding technical aspects such as number of remaining conflicts, amount of delays and transportation throughput. Following tasks should be worked on:

- Become acquainted with concepts for Urban Air Traffic Management
- Familiarize with the ULTRAS requirements and the available toolchain
- Conceptualize the traffic flow management in the toolchain
- Implement a tool for conflict resolution in the Air Traffic Flow Management
- Evaluate results for selected scenarios
- Discussion and documentation

#### Requirements:

- Studies in Aviation Engineering, Traffic Engineering, Automation, Operations Research, etc.
- Motivation and ability to work independently and collaboratively
- High language proficiency of English or German
- Good programming skills (Matlab or Python preferred, but not necessary)
- Knowledge about Air Traffic Control / Air Traffic Flow Management
- Accurate and reliable working style

#### Begin and duration:

From now on, for approximately 6 months.

#### Contact:

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