Vision-based aerial manipulation

Unmanned Aerial Vehicles have become a major field of research in recent years. Nowadays, more and more UAVs are recruited for civilian applications in terms of surveillance, thanks to their mechanical simplicity, which makes them quite powerful and agile. It is a fact that the development of aerial platforms with advanced perception capabilities has been gradually increased. Based on these capabilities more complex application scenarios are proposed as a next step, like infrastructure inspection and maintenance,. The aim of this project is to develop a vision based control scheme to influence and improve the manipulation and physical interaction capabilities of the aerial agent endowed with a robot arm.

- The manipulation will utilize the vision based perception capabilities of the agent
- Two master students can work collaboratively on this thesis. One with focus on control scheme for vision based manipulation, while the other student will focus on target detection, 3D reconstruction and surface representation strategies for manipulation purposes
- Both simulation and experimental studies should be demonstrated at the end of the project from each participant.
- Some programming experience in C++ is recommended, but not required.
- Frequent discussions between the participants and the supervisors will take place throughout the project.

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