Universität der Bundeswehr München
Fakultät für Luft- und Raumfahrttechnik
Professur für Raumfahrttechnik LRT 9.1
Univ. Prof. Dr.-Ing. R. Förstner

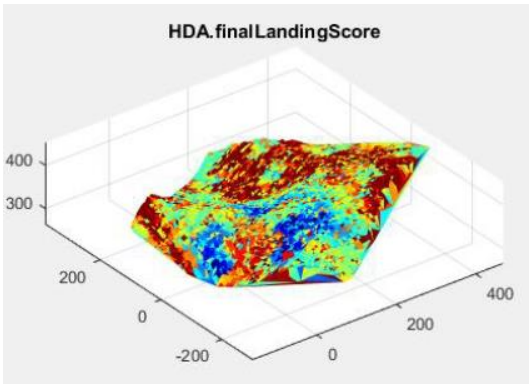
INSTITUTE OF SPACE TECHNOLOGY & SPACE APPLICATIONS

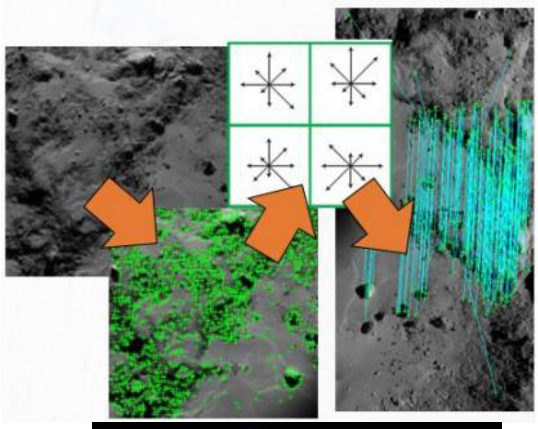
Bachelor-/Projekt-/Masterarbeit

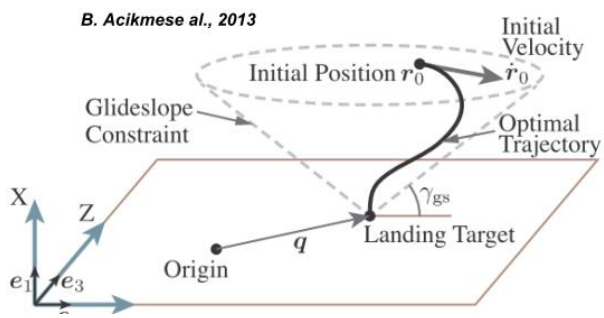
Simulation of safe and accurate planetary landing

Current lunar and planetary missions aim for pinpoint landing accuracy. Landing a set of science instruments at the edge of a particular crater or critical life-supporting supplies in proximity of a lunar outpost is not possible with the kilometer level precision of the past. To perform this challenging landing, a sophisticated landing Guidance, Navigation, and Control (GN&C) system would be necessary, implementing several innovative functions. A terrain relative navigation (TRN) function can use sensors such as optical and thermal cameras, LIDAR, etc. to navigate relative to detected terrain features. To ensure a safe landing in the hazardous terrain, a hazard detection and avoidance (HDA) function must be able to assess if the originally planned landing site is safe, and if not to then autonomously command a retargeting to another safer spot. The guidance and control (G&C) function must then calculate a viable trajectory and thrust arc to the newly chosen landing site.

To develop and test such a landing system, our institute is creating a landing simulation tool in Matlab. The interested student will be able to contribute to the development of any of the above aspects of the simulation tool.







Betreuer: MSc. Kostas Konstantinidis
k.konstantinidis@unibw.de
Geb. 35, Raum 1402
Tel.: 089 / 6004 3246