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THE METHOD OF THE USER-ORIENTED AGILE IMAGING SATELLITE DYNAMIC
AUTONOMOUS MISSION SCHEDULING**Abstract**

Directly to orient terrestrial users is an important application direction of earth observation satellites in the future. Through the terminal equipment on the ground, users upload the observed target information in real time. With the onboard computer, in allusion to the actual capacity for satellite, the in-orbit dynamic autonomous mission scheduling for multi-user and multi-objective is completed, and the imaging data is downloaded. In the article, with designing the user ID code uploaded by the terminal equipment on the ground, satellites could identify the priority of ground users, target properties, imaging requirements, timeliness information and the required ground station. Considering the attitude maneuver capability constraint, solar elevation angle constraint, mission timeliness constraint and minimum time interval constraint between two observed targets, the constraint satisfaction model of the user-oriented agile imaging satellite mission scheduling is established. For the in orbit computing power of satellites, dynamic heuristic rules that could achieve inserting new tasks in real time is designed. With the model and rules, satellites could autonomously complete orbit recursive, calculation of imaging integration time and drift angle compensation. Then, by autonomously generate the attitude guidance law and mission instruction sequence with the same model and rules, satellites autonomously achieve the mission scheduling, imaging and the data download. Finally, based on the simulation, the practicality of this model and algorithm is verified. With the result of our works, the foundation for the future user-oriented agile imaging satellite in-orbit dynamic autonomous mission scheduling is laid.