

56th IAA SYMPOSIUM ON SAFETY, QUALITY AND KNOWLEDGE MANAGEMENT IN SPACE
ACTIVITIES (D5)

Emerging trends of knowledge management in organizations (2)

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LSTM-BASED ESTIMATION OF THE SATELLITE REMAINING USEFUL LIFE IN PRESENCE OF
ADCS FAULTS**Abstract**

Attitude determination and control system (ADCS) is the crucial subsystem of every satellite that its faults could degrade the mission performance or yield in a space mission failure. When faults are detected in a system, the remaining useful life (RUL) has been introduced as a definite criterion to choose the appropriate recovery method. Besides, recurrent neural networks (RNN) have proven their ability in analysis of time series. In this regard, the present study has adopted the LSTM algorithm to calculate the RUL of a satellite in presence of faults as time series. It is assumed that the ADCS hardware is composed of the star tracker and reaction wheels. The proposed algorithm provides the required data for autonomous system health monitoring by simulating common ADCS faults and contributes to the robustness assessment of satellite systems.