Due to its hard combinatorial nature, substantial work has been done on the problem of optimizing messages transmission ordering on the Controller Area Network (CAN) – a communication fieldbus well designed for sending and receiving short real-time control messages. The performance of this scheduling mechanism relies on the optimal messages transmission ordering and on the worst-case analysis. A measure for quantifying the possible delay of messages is proposed and is based on a quadratic assignment formulation, which allows the use of optimization procedures. The SAE (Society of Automotive Engineering) benchmark for class C automotive systems concerning safety critical control applications is considered.

References


