

Active Inspection and Reverse Engineering

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Abstract

We propose a new design for inspection and reverse engineering environments. In particular, we investigate the use of discrete event dynamic systems (DEDS) to guide and control the active exploration and sensing of mechanical parts for industrial inspection and reverse engineering. We introduce dynamic recursive finite state machines (DRFSM) as a new DEDS tool for utilizing the recursive nature of the mechanical parts under consideration. The proposed framework uses DRFSM DEDS for constructing an observer for exploration and inspection purposes. We construct a sensing \rightarrow CAD interface for the automatic reconstruction of parts from visual data. We also implement a graphical interface for designing DRFSM DEDS controllers.

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