An Assembly Sequence Real-Time Search System Using Artificial Intelligence

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ABSTRACT

The purpose of this project is to evaluate and select assembly sequences using both Artificial Intelligence and Real-Time Search System techniques. Part of subassemblies are put together in the mechanical assembly of a product can drastically affect the efficiency of the assembly process. First, the representations of assembly products and system resources are proposed. Then, four evaluation criteria such as direction change, fixture complexity, directionality and tool change are presented along with a system classification. A* search strategy and heuristic functions are applied in the model. In addition, a Real-Time Search System is established in accordance with difference components put on the system in order to find the proper assembly sequences. Finally, an assembly example is adopted for illustrating and validating the performance of the system being developed.

Keywords : Assembly Sequence Planning ; Artificial Intelligence ; Heuristic Functions ; Real-Time Search System

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