

Modelling of Assembly Sequence Planning Problem using Base Part Concept

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Abstract. Assembly sequence planning (ASP) plays an important role in manufacturing because it determines the investment on the assembly facilities. Recently, various research works have been done to optimize the ASP problem using different optimization algorithms. Besides the algorithm efficiency, another factor that directly contributed to the quality of the solution is how the problem is modelled. According to the existing research, the most accurate approach to represent the ASP is to model base on the part of product. However, this approach resulting in the large number of assembly sequence possibility, and finally make the optimization process become harder. This paper proposed a simpler version of part-based representation using the base part concept. In the proposed model, the base part for the product is defined prior to the establishment of the precedence constraint. This approach has contributed to a smaller search space that resulting in better chance to obtain optimum solution during the optimization. The proposed ASP modelling approach however limited the number of possible solution, since the base part was fixed prior to the optimization.