POEAM – a method for the Part Orientation Evaluation for Additive Manufacturing

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ABSTRACT

In the industrial application of additive manufacturing processes a significant amount of time and resources is dedicated to the orientation and pre-print setup of the geometry. Steps like the generation of support structures and the process simulation are among the most time consuming. For the thorough assessment of an orientation of a given geometry, even more criteria, like print time or surface quality, need to be considered. POEAM proposes a method for an efficient assessment of a set of orientations, by means of well formulated criteria and an early elimination of insufficient orientations. The goal is to narrow the search field, so costly preparation steps will only be performed on orientations that promise a superior end result. Furthermore POEAM is an automated process, which means it can be performed with minimal human interaction, resulting in an optimum regarding cost-efficiency and evaluation time. The method was applied to a representative geometry and has shown results that confirm the advantages mentioned above.