

## Article Abstract

<b>Title:</b>	<b>Optimization of machining fixture layout for tolerance requirements under the influence of locating errors</b>
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<b>Journal:</b>	<i>International Journal of Engineering, Science and Technology</i> , Vol. 2, No. 1, 2010, pp. 152-162.
<b>Abstract:</b>	Dimensional accuracy of workpart under machining is strongly influenced by the layout of the fixturing elements like locators and clamps. Setup or geometrical errors in locators result in overall machining error of the feature under consideration. Therefore it is necessary to ensure that the layout is optimized for the desired machining tolerance for a given deviation in the set up or geometry of the locator. Also, the locator layout should be capable of holding the workpart in a unique position during machining thus providing deterministic location. This paper proposes a Genetic Algorithm (GA) based optimization method to arrive at a layout of error containing locators for minimum machining error satisfying the tolerance requirements and providing deterministic location. A three dimensional workpiece under the 3-2-1 locating scheme is studied. Results indicate that by optimally placing the error containing locators the geometric error component of the machining error can be substantially reduced thus enabling compliance to overall dimensional requirements.
<b>Keywords:</b>	Machining error, optimal layout, locator error, genetic algorithm