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## Multi-objective Optimization of Spraying Trajectory Planning for Large Ship Blocks using Evolutionary Computation

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### Abstract

Automated spraying is among the priorities in the development of China's shipbuilding industry today with the increased consciousness of product quality, processing efficiency and environmental friendliness. The research topic is derived from a true case of a shipyard. A mobile truss platform hoisted with a six-axis robot is deployed for large ship blocks spraying. This paper studies the trajectory planning problem of spraying. A spray distribution model based on  $\beta$  distribution is established, NSGA-III is applied to minimize working time and the variance of paint film thickness, and maximize paint utilization.

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