

Anomaly Detection During Additive Processes for DLP 3D Printing

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(P19)Abstract—Additive manufacturing is gaining attention in various fields such as medical applications, aerospace, defense, and complicated manufacturing industries. This is due to the advantages of additive manufacturing including reduced logistical constraints and the ability to produce customized products. However, the materials used in additive manufacturing are generally expensive and highly sensitive to changes in external conditions. For these reasons, it is crucial from a productivity standpoint to monitor the additive manufacturing process closely to detect any anomalies early on and decide whether to continue with the layering process.

In this paper, we developed an algorithm that takes camera footage as input to determine the quality of the additive manufacturing output. We achieved an accuracy rate of 99.65%. Additionally, to simulate rare abnormal conditions, we used computer graphics to define nine different abnormal states and generated data for these conditions.

Keyword— Additive manufacturing, DLP(Digital Light Processing), Anomaly Detection, Image, Anomaly Monitoring

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