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## Machine Vision and Radio-Frequency Identification (RFID) based Real-Time Part Traceability in a Learning Factory

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### Abstract

Visual inspection based quality control systems are deployed to meet the growing demand of high-quality products. In this paper, an inexpensive RFID (Radio-Frequency Identification) technology and a machine vision system have been integrated within an existing learning factory. RFID technology is used to trace a product/part from its origin, enabling the visibility of the product/part's entire movement in the value chain. The goals of the paper are to track the workpieces in real time (i) to provide immediate feedback, through visibility, to operators and floor managers and (ii) to develop a database to trace parts, in future, backward through value chain. The system can be used to predict the probability of defective parts in the value chain using machine learning algorithms. This will help the manufacturers to trace the parts in value chain at any point of time including aftersales. Traceability has been a pain point for manufacturers during product recalls.

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