ELEVATING THE ACCURACY LEVEL OF PREDICTIVE MAINTENANCE IN FIELD SERVICES MANAGEMENT

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Abstract

Maintenance costs are highly substantial, manufacturing plants tend to spend huge amount of money to have maintenance activities steady as it can directly impact on key factors of the production process; productivity and profitability. However, at the same time plants losing another considerable amount of money as a result of unnecessary or improperly carried out maintenance. The foremost reason for unproductive maintenance is non-existence of factual data to quantify the actual desire for maintenance of manufacturing equipment. In many instances, maintenance scheduling is done based on statistical trend data or on the actual failure of machinery. Common judgement towards maintenance costs has been; "*Maintenance is a necessary evil*" or "*Nothing can be done to improve maintenance costs*".

It is said that, industry is currently undergoing what it is considered to be the fourth industrial revolution. Various utilization of condition monitoring tools was presented alongside the progress of IoT and Cloud based technologies, which led to the concepts such as smart cities and smart factories. Huge advancement of condition monitoring tools and their ability to collect numerous real time data has opened a door to new maintenance stagey; Predictive maintenance, which in simply terms means, *do the maintenance only when it is needed.*

Even though the concept of predictive maintenance has been there in the industrial domain since the 1990s, Recent developments of IoT and machine learning has redefined it. Over the last decade, machine learning has made number of contributions in the domain of predictive maintenance and has earned itself a prominent role. But the overuse of feature engineering on data obtained from condition monitoring tools have bounded machine learning capabilities of predictive maintenance models to a designated domain they initiated. In order to address this scenario, researches on deep learning approaches which are able to extract features automatically were encouraged. Goal of this research is to take a deep learning approach to build a reusable predictive maintenance model irrespective of domain or the physical process of plant machinery.

Keywords: Predictive maintenance, Deep Learning, Condition based monitoring