

**DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING-**

**DATA SCIENCE**

**CNC MACHINE FAILURE PREDICTION**

**ABSTRACT**

CNC (Computer Numerical Control) machines are essential tools in various manufacturing industries, providing precision and efficiency in the production of a wide range of parts and components. These machines are relied upon for tasks such as cutting, milling, drilling, and engraving. However, like any mechanical or electrical equipment, CNC machines are susceptible to failures that can disrupt production, lead to costly downtime, and compromise product quality. To address these challenges, predictive maintenance techniques have gained prominence in recent years, offering the ability to forecast and prevent CNC machine failures before they occur. The LightGBM model is shown to be a powerful tool for predicting machine failures and could be implemented by manufacturing companies to improve machine reliability and reduce costs associated with unplanned downtime. This model can effectively predict CNC machine failures with a high degree of accuracy. The model was trained on a dataset of historical machine data, including parameters such as temperature, pressure, and vibration. The trained model was then used to predict future machine failures with a high level of accuracy.

**KEYWORDS** : CNC (Computer Numerical Control) , Reduce costs, Historical machine data, ,LightGBM, [Python](https://ieeexplore.ieee.org/search/searchresult.jsp?matchBoolean=true&queryText=%22Index%20Terms%22:Python&newsearch=true)

**GUIDE NAME :**

**TEAM MEMBERS:**

T.Sravya 20R21A6756

A.Ashwanth 21R25A6701 J.Goutham 20R21A6725