National Institute of Technology Rourkela

Registration Seminar

Seminar Title	: PREDICTION OF CASTING DEFECT WITH ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING
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Venue	: Seminar Hall, ME001
Date and Time	: 04 Feb 2025 (4:30 PM)

Abstract : In modern day steel manufacturing, the continuous casting process plays an important role in the manufacturing of billet, bloom, and slab. Normally these products are in semi-finished condition so it will further go for processing for end products like TMT, channel, rail etc. Here quality of the product from Caster plays an important role as a deviation in the quality standard of the product may lead to rejection of the end product or it may cause disruption in the process. So, this discussion aims to discuss various aspects of the defect and its corresponding experimental result. Different machine learning algorithm like Ridge classifier, linear discriminant Analysis, Logistic Regression, K Neighbour Classifier, decision Tree Classifier, SVC, Gaussian NB, Bagging Classifier and Gradient Boosting Classifier were used to analysis to predict the metallurgical grade. The different grade of steel produced are PC1116, PC980 and PC445. Among the above algorithms, Gradient Boosting Classifier has 96% percent accuracy in predicting the metallurgical grade. Input data were also analyzed with scatter plot, histogram, and box plot. Main effect plot, AUC and ROC were plotted for performance analysis.

Keywords: Billet, Bloom, continuous, casting, defect, machine learning