**Abstract**

Cotton, popularly known as White Gold has been an important commercial crop of National significance due to the immense influence of its rural economy. Transfer of technology to identify the quality of fibre is gaining importance. The physical characteristics of cotton such as fiber length, length distribution, trash value, color grade, strength, shape, tenacity, density, moisture absorption, dimensional stability, resistance, thermal reaction, count, etc., contributes to determine the quality of cotton and in turn yarn strength. In this paper yarn strength prediction has been modeled using regression. Support Vector regression, the supervised machine learning technique has been employed for predicting the yarn strength. The trained model was evaluated based on mean squared error and correlation coefficient and was found that the prediction accuracy of SVR based model, the intelligence reasoning method is higher compared with the traditional statistical regression, the least square regression model.