**Abstract**

Cotton is a soft, staple fiber that grows in a form known as a boll around the seeds of the cotton plant, a shrub native to tropical and subtropical regions around the world, including the Americas, India and Africa. The fiber most often is spun into yarn or thread and used to make a soft, breathable textile, which is the most widely, used natural-fiber cloth in clothing today. Its widespread use is largely due to the ease with which its fibers are spun into yarns. Cotton's strength, absorbency, and capacity to be washed and dyed also make it adaptable to a considerable variety of textile products.  Cotton It’s fashionable, natural and versatile. The physical characteristics 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 the quality of cotton. In this work, cotton quality prediction is modeled as classification task and implemented using supervised learning algorithms namely REP tree, Classification via clustering, Classification via regression and Multiclass Classifier in WEKA environment on the cotton quality assessment dataset. The classification models have been trained using the data collected from a spinning mill. The prediction accuracy of the classifiers is evaluated using 10-fold cross validation and the results are compared. It is observed that the model based on REP tree classifier produces high predictive accuracy compared to other models.