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Online Tree Models Performance on Art Auction Results: A Comparative Review

Abstract

This paper presents a comparative review of online tree-based models applied to art auction data for real-time price prediction. As art auctions generate continuous data streams, it is crucial to evaluate models that can adapt to changing data pat-terns without retraining on the entire dataset. Five prominent online learning algo-rithms are assessed: Adaptive Model Forest, Adaptive Random Forest, Hoeffd-ing Tree Regressor, Hoeffding Adaptive Tree Regressor, and Stochastic Gradient Tree. Each model's performance is evaluated on key metrics such as sMAPE, computational efficiency, and adaptability to new data trends. The results high-light significant differences in model performance, offering insights into the most effective methods for handling non-stationary auction data. This study serves as a foundation for developing robust prediction models in art markets.