

ABSTRAK

Regresi linier sederhana merupakan jenis pemodelan regresi, yang digunakan untuk mengestimasi hubungan antara variabel-variabel. *National Basketball Association (NBA)* merupakan liga basket profesional di Amerika Serikat. Penelitian ini melihat bagaimana lima algoritma regresi yaitu *Gradient Boosting Regressor*, *Light Gradient Boosting Regressor*, *Extreme Gradient Boosting Regressor*, *AdaBoost Regressor*, dan *Random Forest Regressor* bekerja dengan baik ketika digunakan untuk memprediksi persentase kemenangan tim NBA. berdasarkan statistik individu pemain. Hasil penelitian menunjukkan bahwa *Light Gradient Boosting Regressor* memiliki MSE terendah (0.0106), MAE terendah (0.0820), dan waktu pelatihan tercepat (0.2325 detik). Menurut analisis fitur penting, rata-rata Win Shares pemain per 48 menit, estimasi jumlah kemenangan yang dikontribusikan pemain melalui pertahanannya, persentase dari serangan tim yang melibatkan pemain, pengukuran efisiensi pemain, persentase dari total rebound defensif yang diambil pemain memengaruhi persentase kemenangan. Hasil ini memberikan informasi penting bagi tim NBA untuk meningkatkan strategi dan kinerja tim melalui peningkatan statistik individu yang signifikan.

Kata Kunci: NBA, prediksi kemenangan, regresi, *Light Gradient Boosting Regressor*, feature importance.

ABSTRACT

Simple linear regression is a type of regression modeling, which is used to estimate the relationship between variables. The National Basketball Association (NBA) is a professional basketball league in the United States. This research looks at how five regression algorithms namely Gradient Boosting Regressor, Light Gradient Boosting Regressor, Extreme Gradient Boosting Regressor, AdaBoost Regressor, and Random Forest Regressor perform well when used to predict the winning percentage of NBA teams based on individual player statistics. The results show that the Light Gradient Boosting Regressor has the lowest MSE (0.0106), lowest MAE (0.0820), and fastest training time (0.2325 seconds). According to the essential features analysis, a player's average Win Shares per 48 minutes, the estimated number of wins a player contributes through his defense, the percentage of the team's offense a player is involved in, the player's efficiency measurement, the percentage of total defensive rebounds a player takes affect the winning percentage. These results provide important information for NBA teams to improve team strategy and performance through significant improvements in individual statistics.

Keywords: NBA, win prediction, regression, Light Gradient Boosting Regressor, feature importance.