**Can AI Beat Vegas?**

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**Abstract:** This project aimed to construct a machine learning model that predicts the outcome of NBA games, and wagers that may be placed on games though online sportsbooks. To achieve this, a myriad of game [2, 4] and sports betting [3] data was collected, processed, and engineered to become acceptable input for classification algorithms [1]. The original thesis was that the inclusion of gambling point spreads, due to their recent abundance in digital form and constantly updating nature, would be helpful in creating a predictive model for game outcomes. This quickly failed, and the objective shifted to optimizing predictive models. The models, or *classifiers*, were used to predict two things: whether the home team will win the game, and whether they will beat the spread. Classifiers generated were tested on holdout data, then evaluated using accuracy, precision, and recall. Many models outperformed Vegas when predicting outcome outright; the best of which scored an accuracy of 73% for win predictions. However, models performed worse when predicting gambling outcomes. The best model for spread predictions scored 57% accuracy, which is better than it sounds, given that Vegas intentionally sets point spreads to encourage equal distribution of bets.

**References:**

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[4] Sullivan, Ryan. “NBA's Most Valuable Statistic Discovered: How To Predict Team Wins With 95% Accuracy.” *Sports Gambling Podcast*, 20 Apr. 2020, www.sportsgamblingpodcast.com/2020/04/20/nba-most-valuable-statistic/.