

Predicting Colts Run-Plays

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Fundamentals of Machine Learning 64060

Improving the Browns Run-Defense

Objectives:

- Create a machine-learning model that can help Cleveland's defense stop the run next week against the Indianapolis Colts
- Model must be equipped to handle different game-time scenarios
- Model must be able to classify the direction of the play
- Model must generate accurate results during testing

Methodology

Approach:

- Filtered data to only include Colts running plays
- Employed variables 'X', 'Y' and 'Orientation' as predictors for the model because they indicate the running back's field position and can easily be obtained during live games
- The k-nearest neighbor algorithm was implemented based on its classification reliability, and its capacity to store complete datasets in training
- 80% of the data was trained, and 20% was used for testing/model-evaluation

Model Results

- With k=13 (optimal value):
 - Accuracy: 90.05%
 - Recall: 89.72%
 - Precision: 90.57%
 - Specificity: 90.38%
- The results indicate strong model-performance; therefore, the Cleveland defense can use this model, in obvious run-play situations, to accurately predict the direction of the play.
- Furthermore, the Cleveland offense could use this model to uncover predictable trends in the team's running plays and correct them as needed.

Actual Run Direction

Predicted Run Direction

	Predicted Run Direction	
	Left	Right
Left	94	10
Right	11	96