Predicting Job Placement

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Introduction

Abstract

This project compared the performance of several machine learning algorithms in predicting job placement outcomes based on candidate data

Background

There exists a great opportunity to apply modern techniques of Data Science and Machine Learning to optimize the recruitment process and improve the quality of hires.

The dataset contains attributes relating to a candidate's educational background and work experience

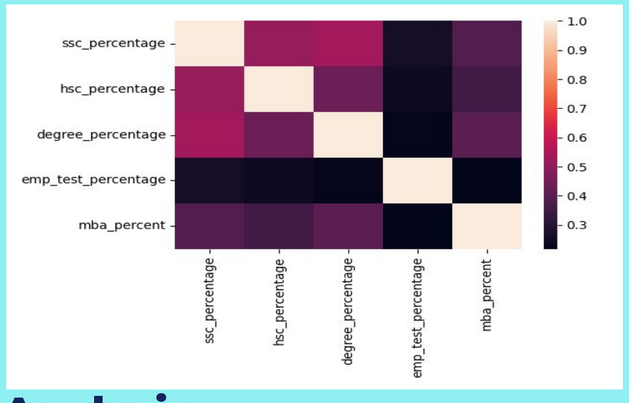
Objectives

- Utilize these attributes to predict whether a candidate will receive a job offer
- Compare the performance of several Machine Learning models

Research

Dataset Features

- Contains a total of 215 records,
- 12 features and 1 target.
- Categorical variables: (gender, ssc_board, hsc_board, hsc_subject, undergrad_degree, work_experience, and specialization)
- Continuous variables (ssc_percentage, hsc_percentage, degree_percentage, emp_test_percentage, and mba_percent).



Methodology

MODELS USED

- Logistic Regression
- K-Nearest Neighbors
- Decision Tree
- Neural Network

FEATURE SELECTION

- kNN - Select K-Best
- Decision Tree - Recursive Feature elimination CV
- Logistic Regression - Recursive Feature elimination CV
- Neural Network - No Feature Selection

Hyperparameter Tuning/Cross Validation

- Grid-Search CV was used for all models

Analysis

Model	Not placed Precision	Not placed recall	Not placed F1	Placed Precision	Placed Recall	Placed F1	Accuracy
KNN	0.90	0.60	0.72	0.82	0.96	0.89	0.84
Decision Tree	0.75	0.80	0.77	0.89	0.86	0.87	0.84
LogisticRegression	0.93	0.87	0.90	0.93	0.96	0.95	0.93
Neural Network							0.8462

Conclusion

Results

The study found that **logistic regression** was the most performant model, achieving an accuracy of **93%** in predicting job placement outcomes

Future Work

- Future research could explore the effectiveness of other machine learning algorithms or ensemble methods
- Study could be expanded to include additional factors that may influence job placement outcomes, such as personality traits, soft skills, and cultural fit