



DUNGEONS AND DRAGONS: CHARACTER MULTICLASSING

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CHARACTER CREATION



Race



Class



Spells



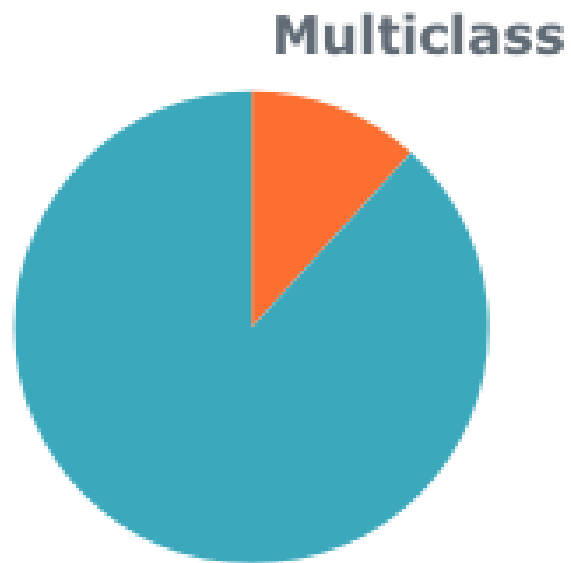
Skills



Stats



Character Class Types



Base Class

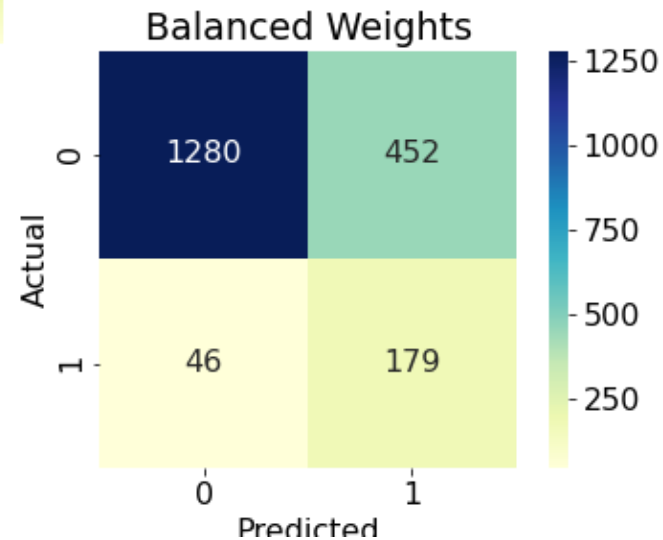
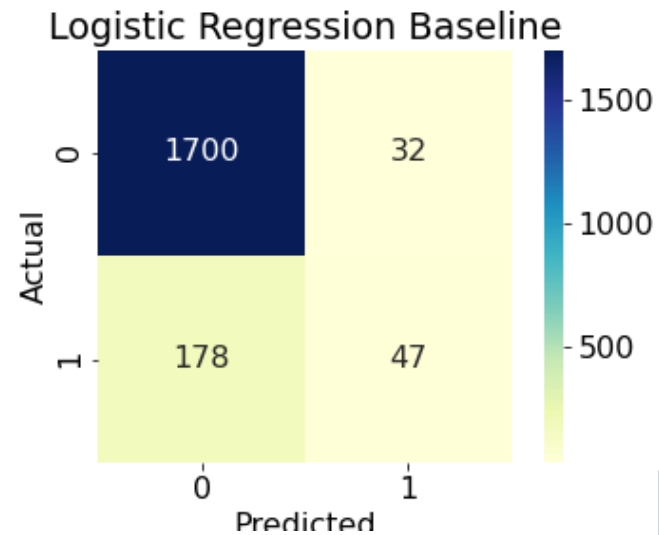
MULTICLASSING IN DND

- When leveling up, can choose to “take a level” in a different class to gain different abilities.
- Method of character optimization
 - Not always better
- Complicated
- Novel story ideas



DND CHARACTER SHEET DATASET AND TOOLS

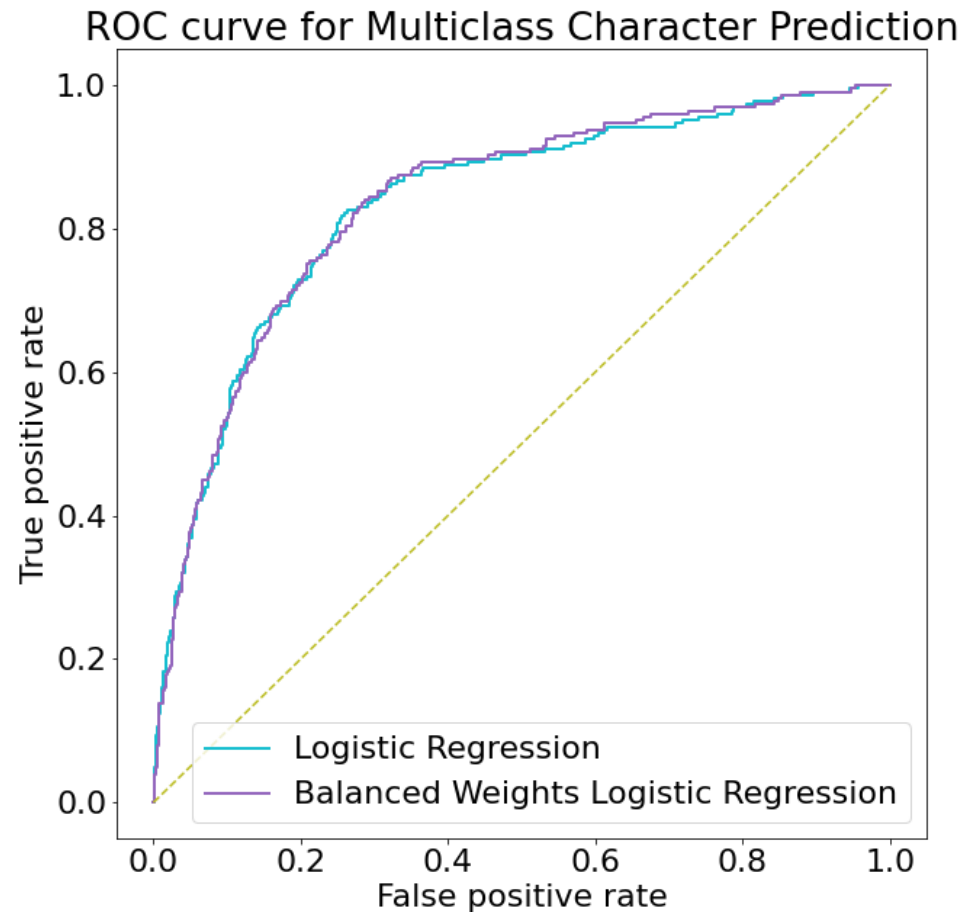
- From B. Ogan Mancarci's `printSheetApp` and interactive Sheet (Online character sheet tools)
 - Features include HP, AC, level, skills, weapons, race, spells, ability scores, class
- Homebrew (non-standard data)
- Free text fields:
 - Spells, Weapons, Alignment
- Logistic Regression focus
- Tools:
 - Tableau, Matplotlib, Seaborn
 - Pandas, NumPy
 - Scikit-learn



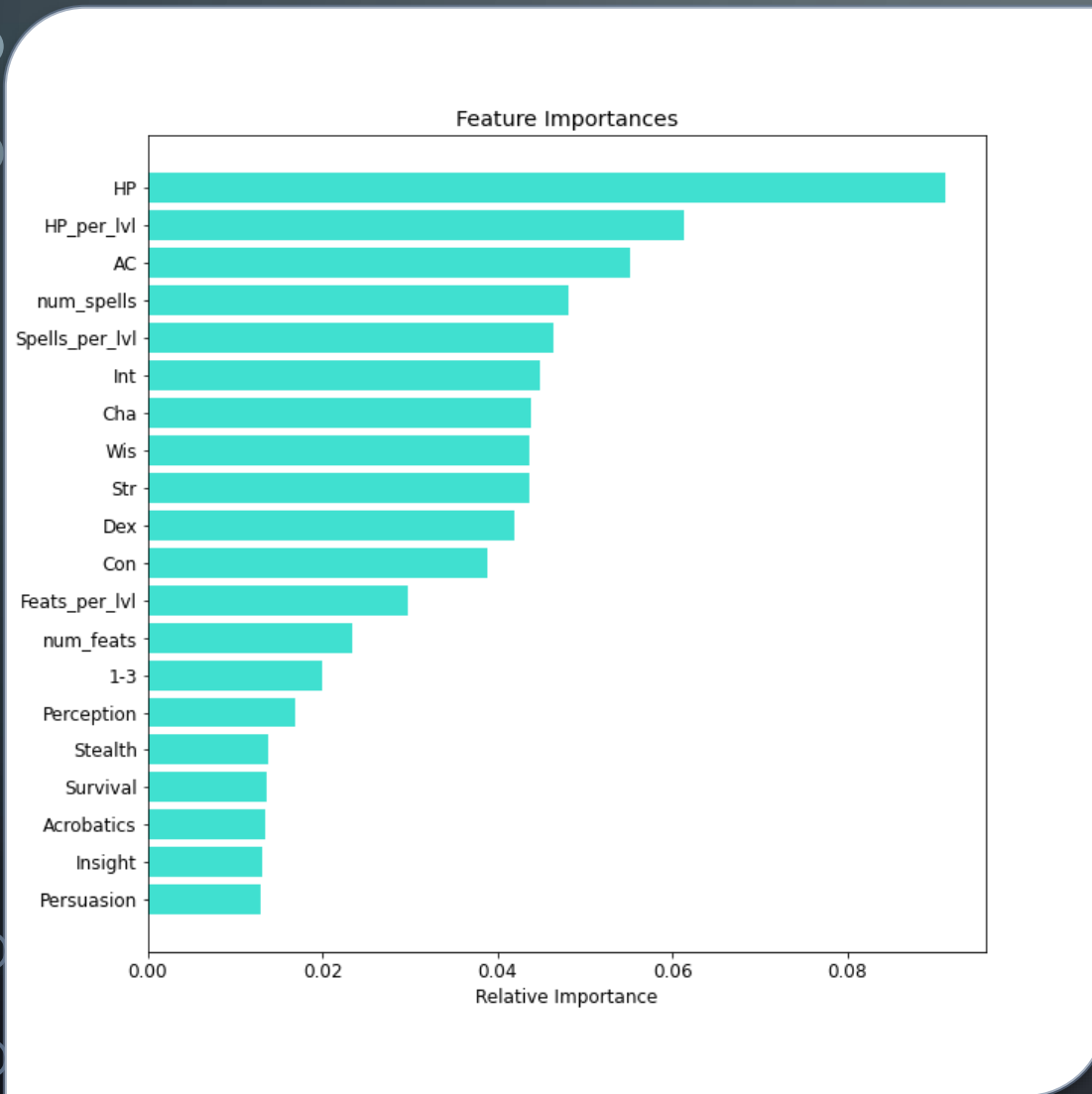
CONFUSION MATRICES

- Severe class imbalance so accuracy is deceiving
 - Baseline: 0.893
 - Balanced Weights: 0.746
- Increase correct + class guess
- Increase in false positives
- Decrease in false negatives

LOGISTIC REGRESSION STATS



Model	Precision	Recall	F-1 Score	ROC AUC
Baseline	0.595	0.209	0.309	0.595
Balanced Weights	0.284	0.796	0.418	0.767



FEATURE IMPORTANCE

- Engineered features
- Character stats had a large impact
- Skills, levels
- More engineered features could improve performance.

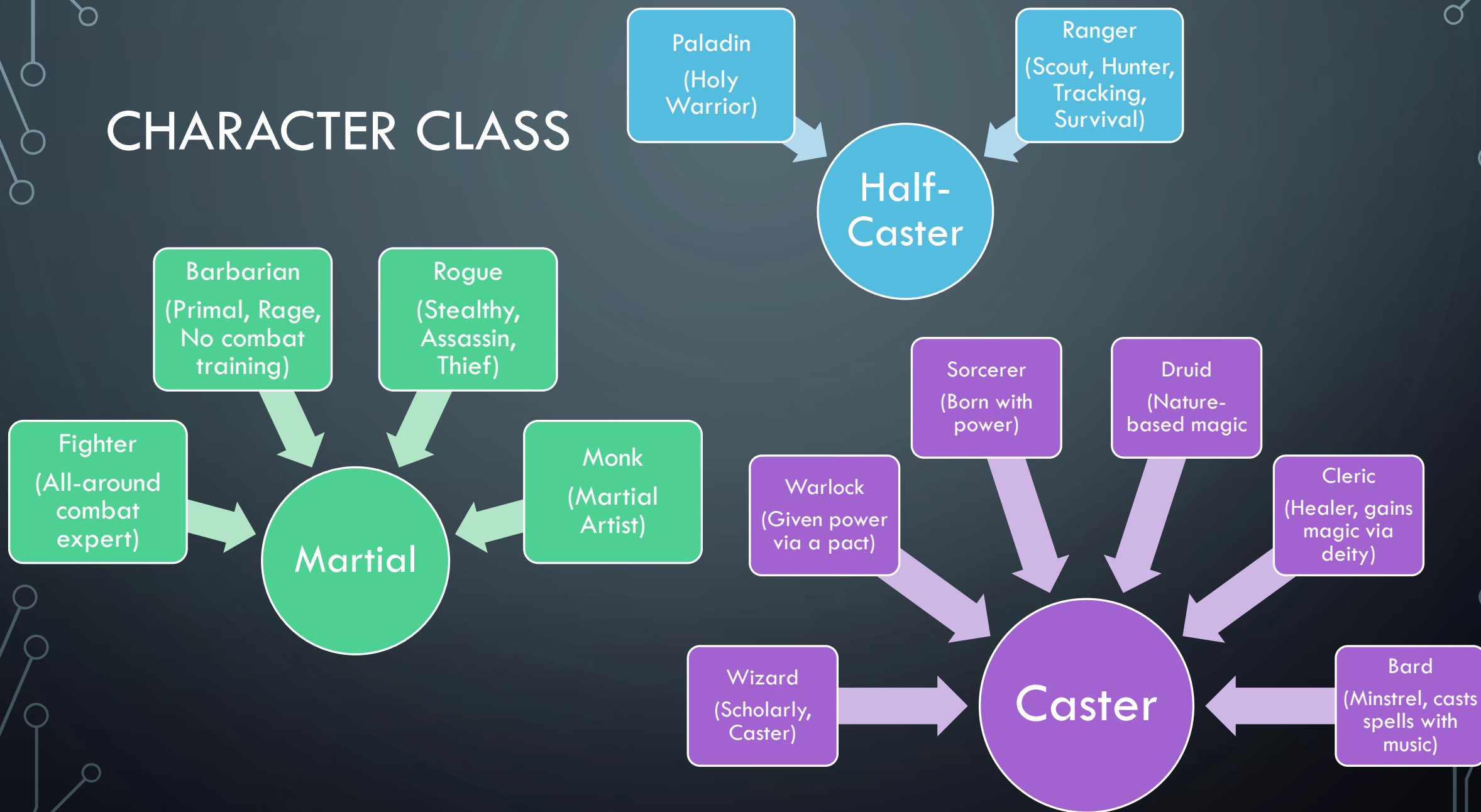
SOURCES/ ACKNOWLEDGEMENTS

- Gary Gygax and Dave Arneson for creating DnD.
- Wizards of the Coast (subsidiary of Hasbro) which publishes DnD guides.
- B. Ogan Mancarci for his data collection.
 - <https://github.com/oganm/dnndata>
- Dan Quach for his 2020 blogpost about creating a classifier using Oganm's dataset.
 - <https://towardsdatascience.com/classifying-character-classes-in-dungeons-dragons-with-machine-learning-86751240594d>

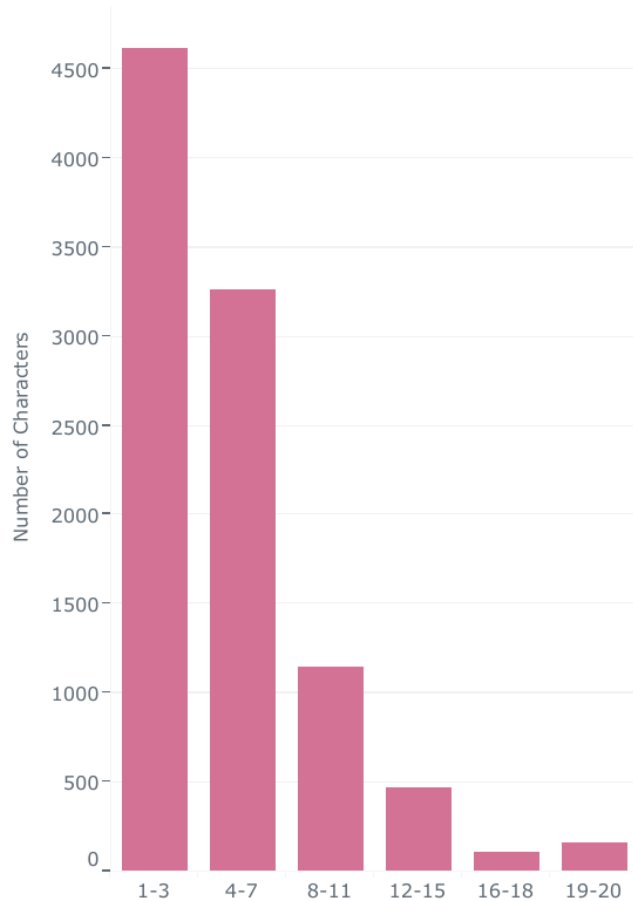


ANY QUESTIONS?

CHARACTER CLASS



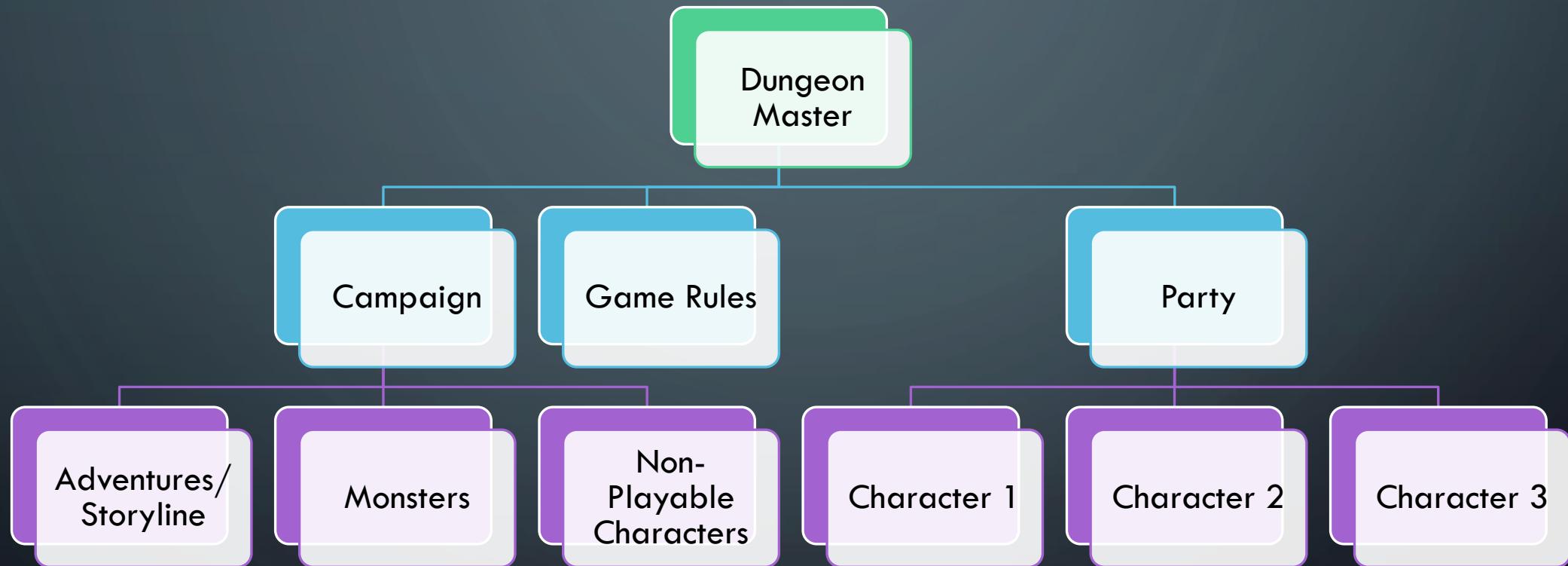
Level Dist for Charcters

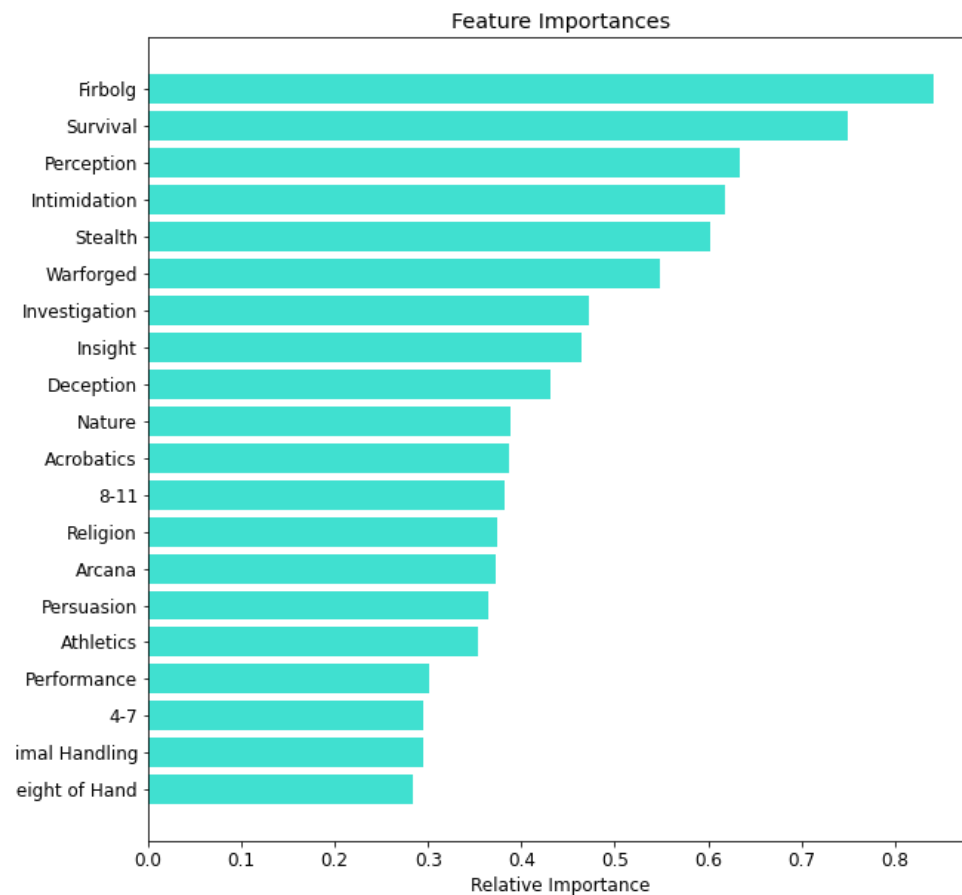


FEATURE ENGINEERING

- Normalize to level since data skewed to lower-level characters.
 - HP/level
 - Spells/level
 - Feats/level
- Weapon categories: martial, simple, ranged.
- One-hot encoding skills, race/ other race group, casting stat, level groups

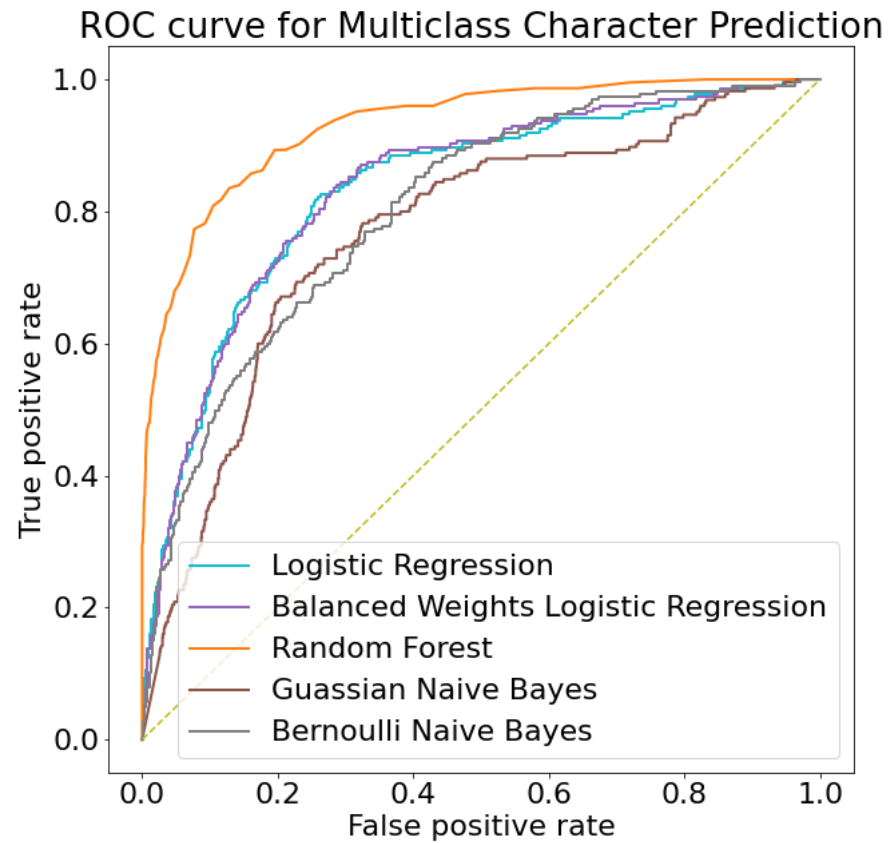
DUNGEONS AND DRAGONS (DND) EXPLAINED





FEATURE IMPORTANCE

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- More engineered features could improve performance.



ROC CURVE FOR ALL
MODELS