DUNGEONS AND DRAGONS: CHARACTER MULTICLASSING

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CHARACTER CREATION

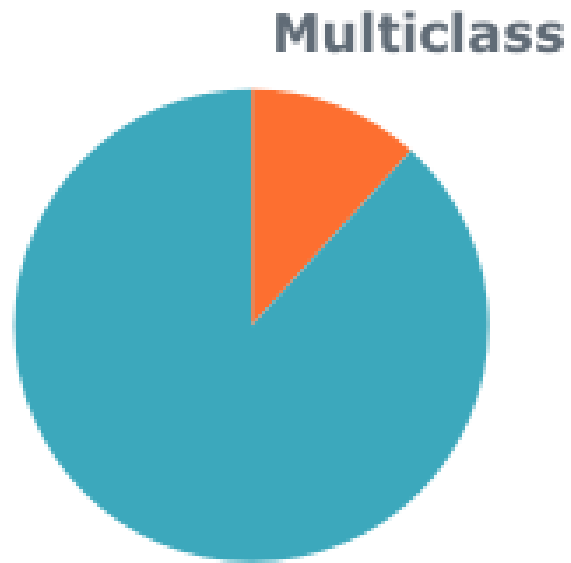Race Class Spells Skills Stats

# MULTICLASSING IN DND

Character Class Types

- Multiclass
- Base Class

- 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, casting, background, casting, class

- Homebrew (non-standard data)

- Free text fields:
  - Spells, Weapons, Alignment

- Logistic Regression focus

- Tools:
  - Tableau, Matplotlib, Seaborn
  - Pandas, NumPy
  - Scikit-learn
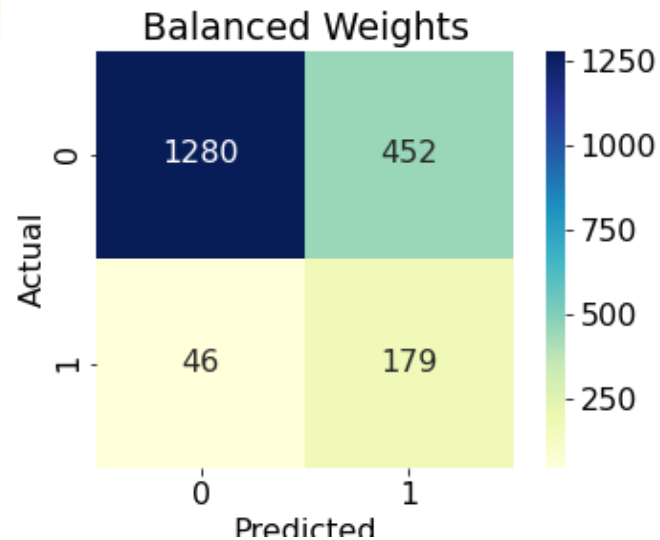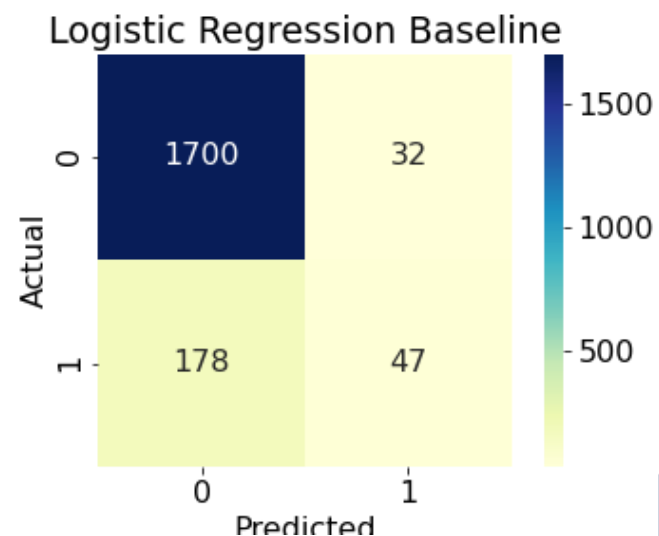
CONFUSION MATRICES

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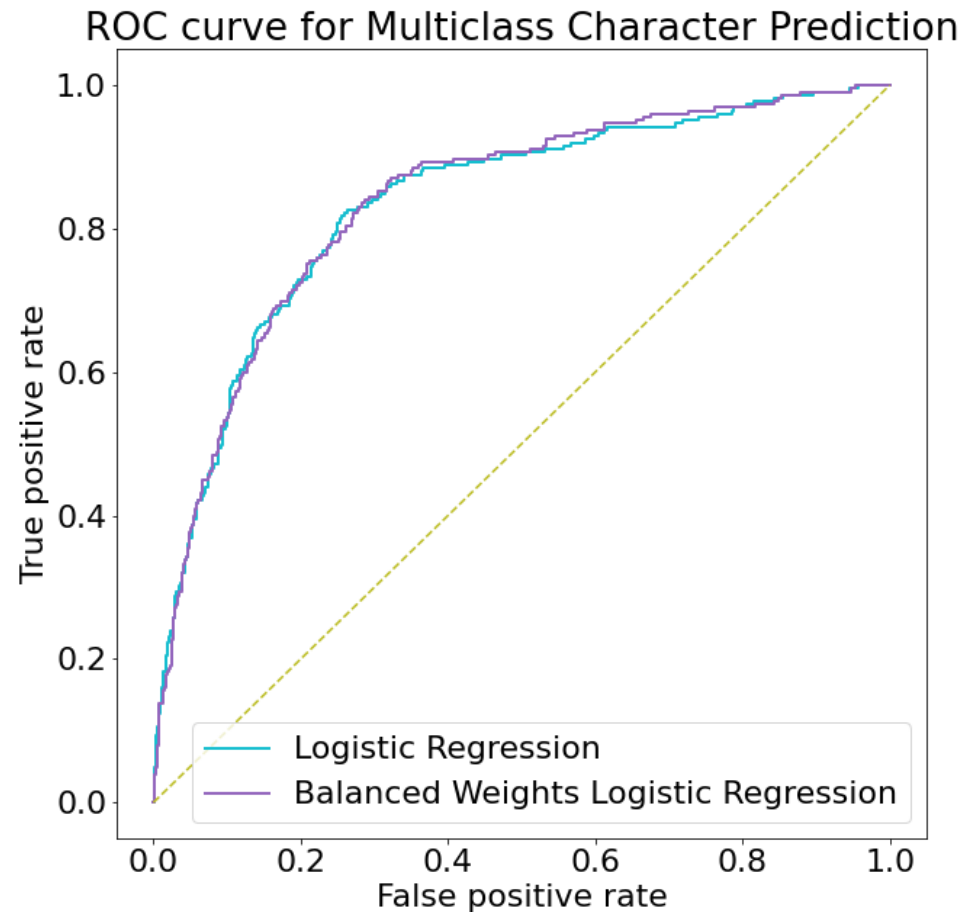
Model	Precision	Recall	F-1 Score	ROC AUC
Baseline	0.595	0.209	0.309	0.595
Balanced Weights	0.284	0.796	0.418	0.767

Feature Importances

FEATURE IMPORTANCE
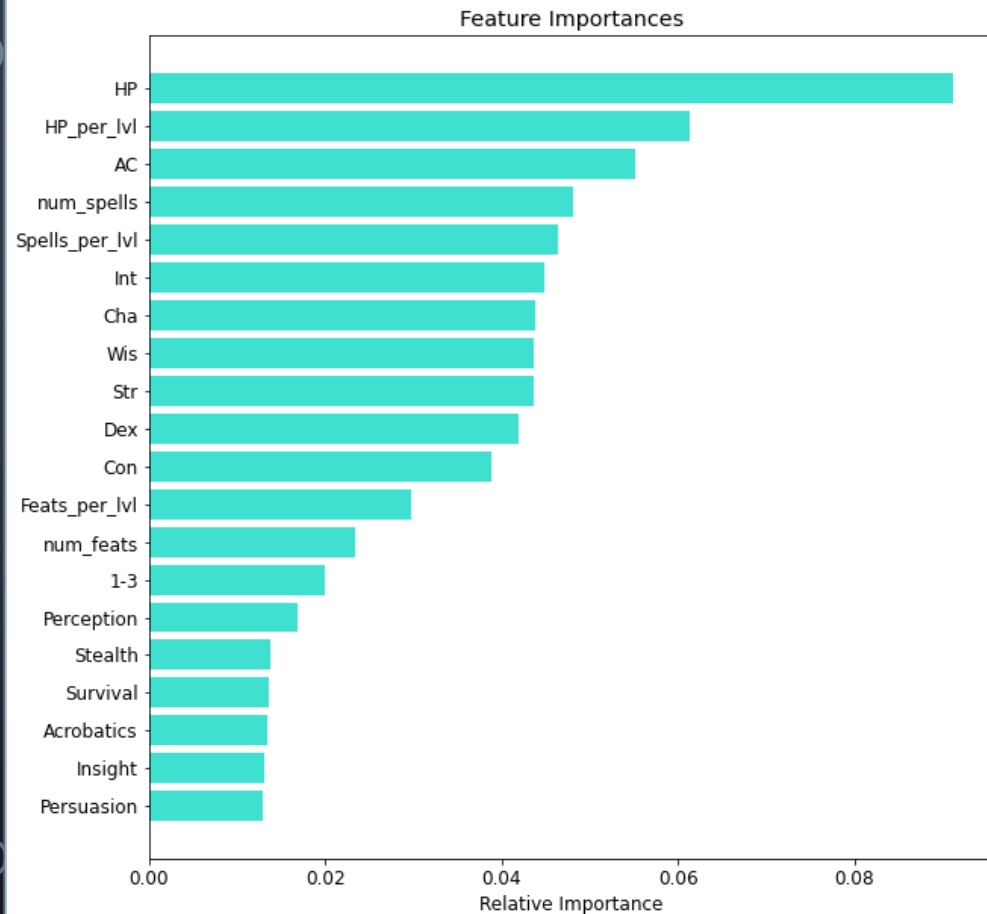
- Engineered features

- Character stats had a large impact

- Skills, levels

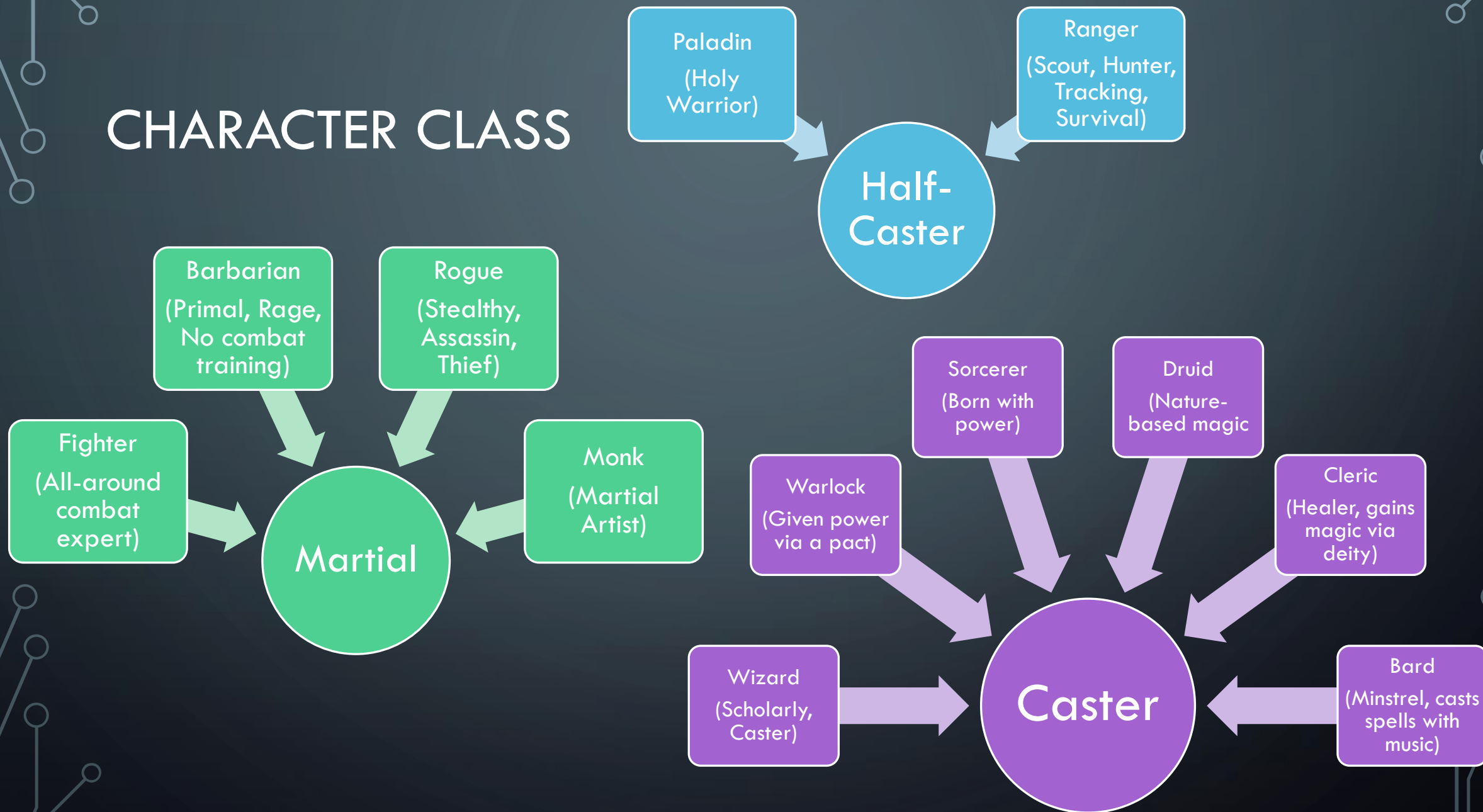- More engineered features could improve performance.

SOURCES/ ACKNOWLEDGEMENTS

- Gary Gygax and Dave Arneson for creating DnD.

- Wizards of the Coast(subsidary of Hasbro) which publishes DnD guides.

- B. Ogan Mancarci for his data collection.

  - https://github.com/oganm/dnddata

- 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
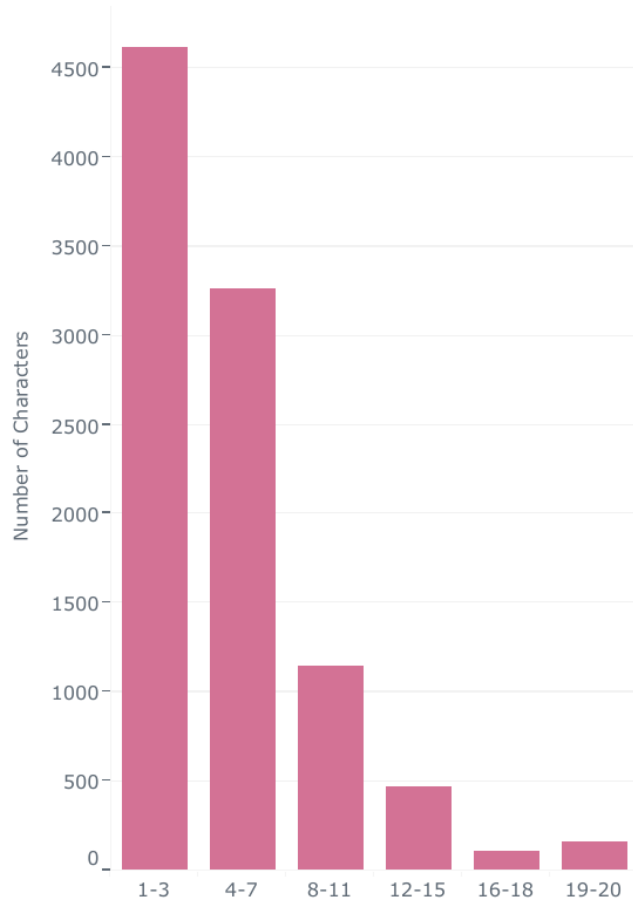
ANY QUESTIONS?

CHARACTER CLASS

Paladin (Holy Warrior)

Ranger (Scout, Hunter, Tracking, Survival)

Half-Caster

Barbarian (Primal, Rage, No combat training)

Rogue (Stealthy, Assassin, Thief)

Sorcerer (Born with power)

Druid (Nature-based magic

Fighter (All-around combat expert)

Monk (Martial Artist)

Warlock (Given power via a pact)

Cleric (Healer, gains magic via deity)

Martial

Wizard (Scholarly, Caster)

Caster
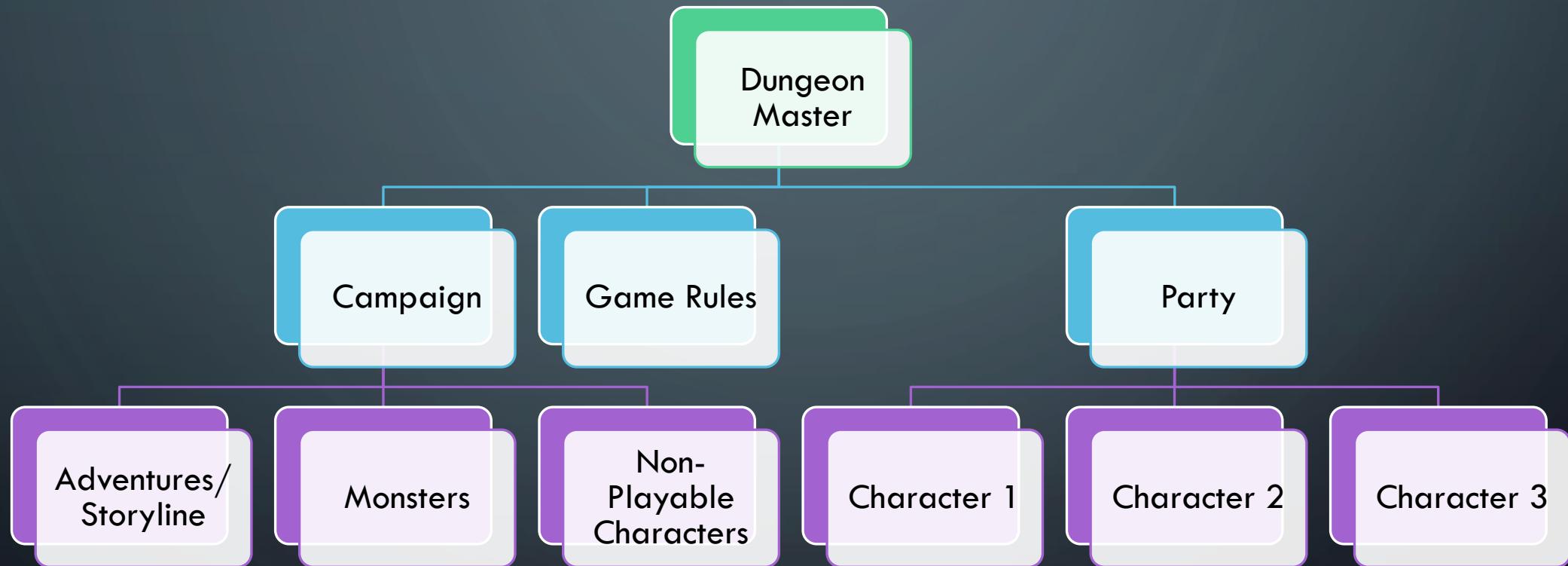
Bard (Minstrel, casts spells with music)
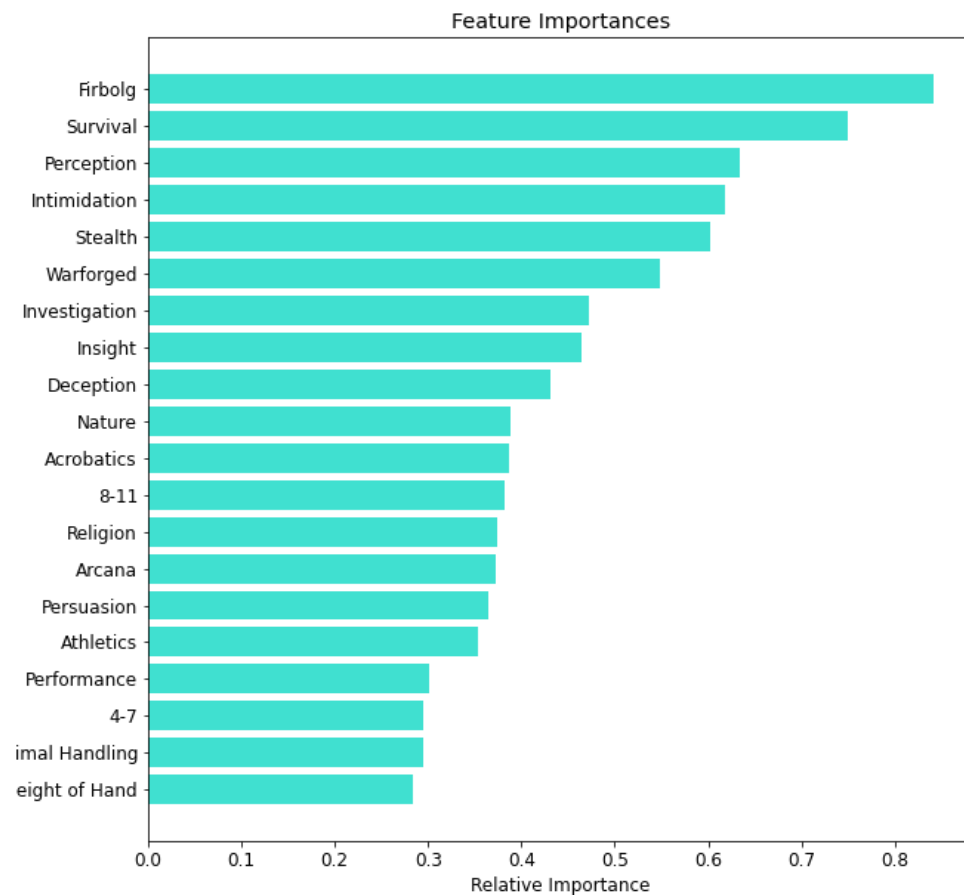
Level Dist for Charcters

FEATURE ENGINEERING

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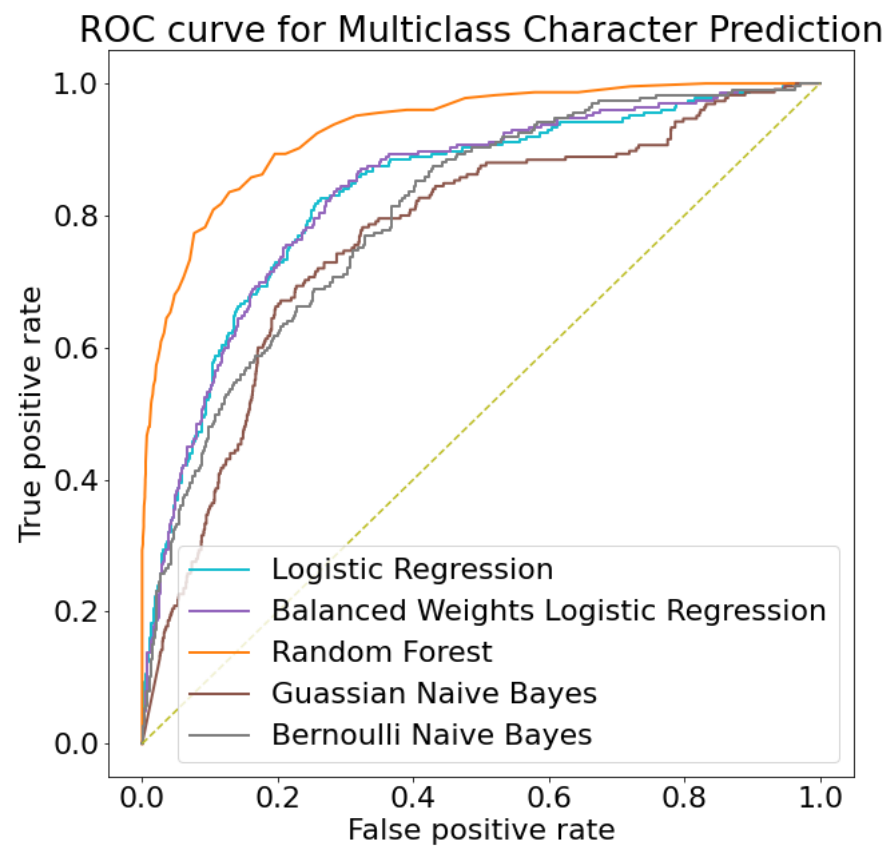- One-hot encoding skills, race/ other race group, casting stat, level groups

DUNGEONS AND DRAGONS (DND) EXPLAINED

FEATURE IMPORTANCE

- Skills, levels

- More engineered features could improve performance.

ROC CURVE FOR ALL MODELS