Improving NBA Player Evaluation with Machine Learning

By Chum Mapa

CONTEXT

- NBA G-League Creation
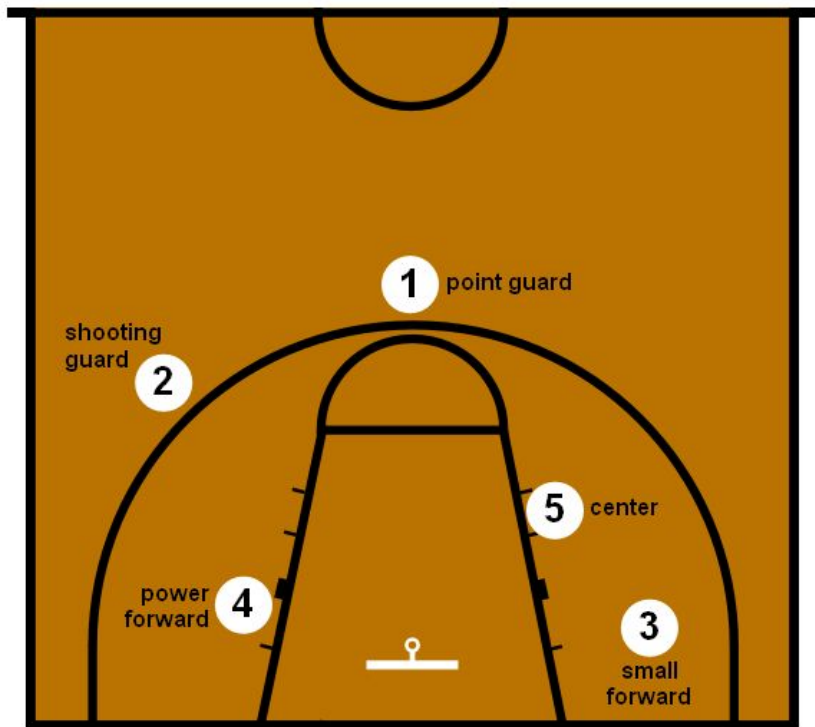- Player Development Strategy

PURPOSE

- Help General Managers track player development
- Inform Decisions

OBJECTIVES

- Have positions actually become more fluid in the modern NBA?
- Create/Define new player molds
- Create Prediction Model

Traditional Basketball Positions

Point Guard: Primary ball handler and passer

Shooting Guard: 3-point range and long mid range

Small Forward: Versatile

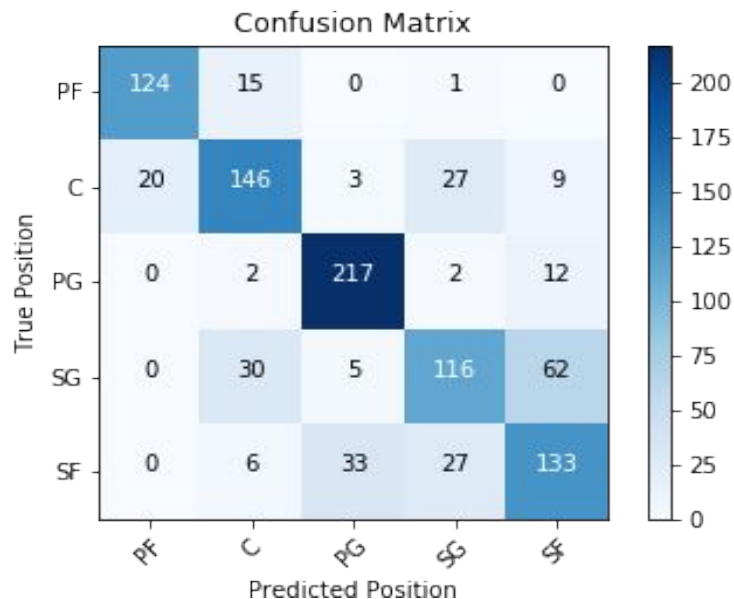Power Forward: score close to the rim and shoot mid-range

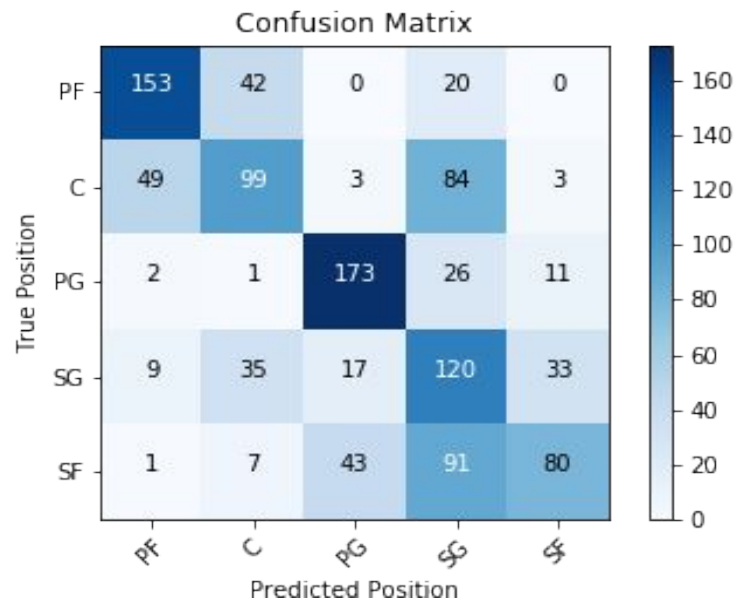Center: Slower, taller "back to the basket" players

DATA

FiveThirtyEight Sports
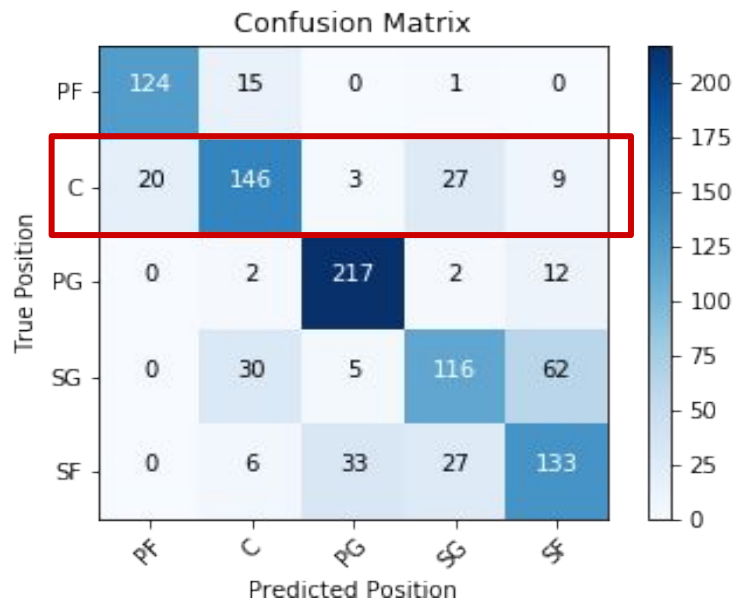
BASKETBALL REFERENCE
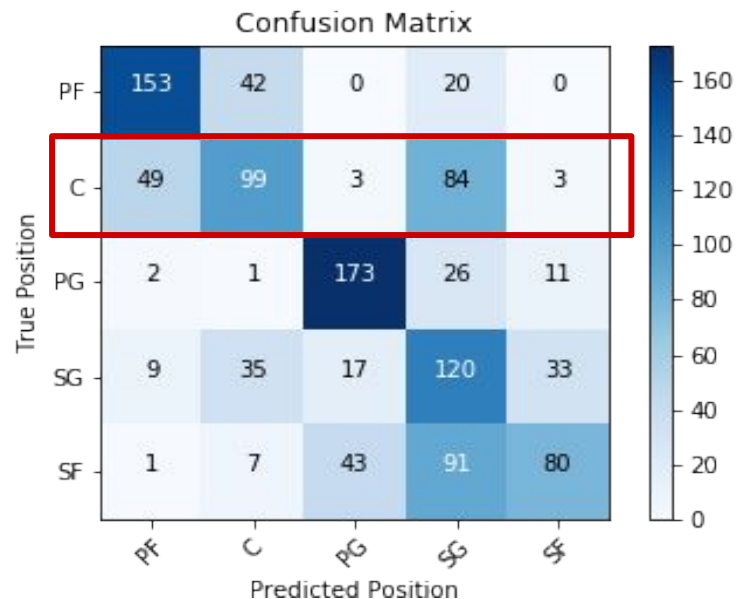*via Bart Torvik (barttorvik.com)*

OLD NBA (pre 2000)

Confusion Matrix

MODERN NBA (2000–Present)

Confusion Matrix

OLD NBA (pre 2000)

Confusion Matrix

71.2%

MODERN NBA (2000–Present)

Confusion Matrix

41.5%

WORKFLOW

- Creating modern player-molds

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┌─────────────────────┐
│     Clustering      │
│       (KNN)         │
└─────────────────────┘
          │
          ▼
┌─────────────────────┐
│   Dimensionality    │
│     Reduction       │
└─────────────────────┘
          │
          ▼
┌─────────────────────┐
│    Define new       │
│   player-molds      │
└─────────────────────┘
          │
          ▼
┌─────────────────────┐
│ Predict Probability of │
│ a player becoming a │
│   modern NBA star   │
└─────────────────────┘
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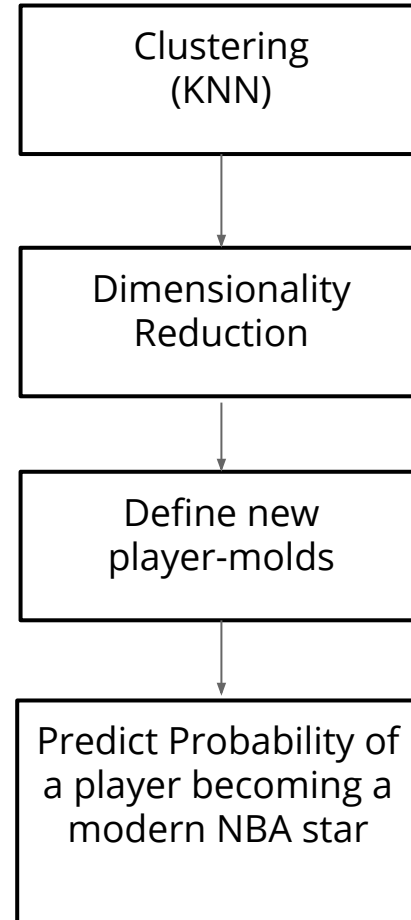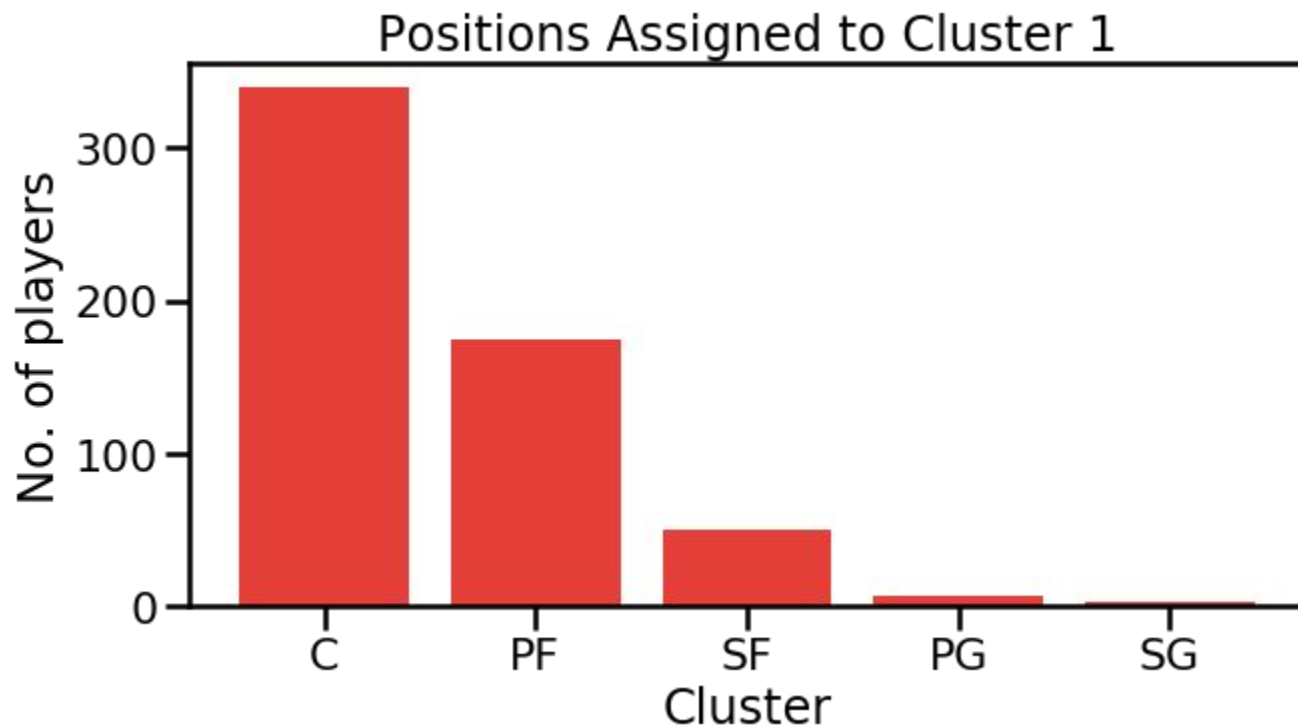
New Positional Categories

KMeans Clustering on NBA Players in 2008-2020
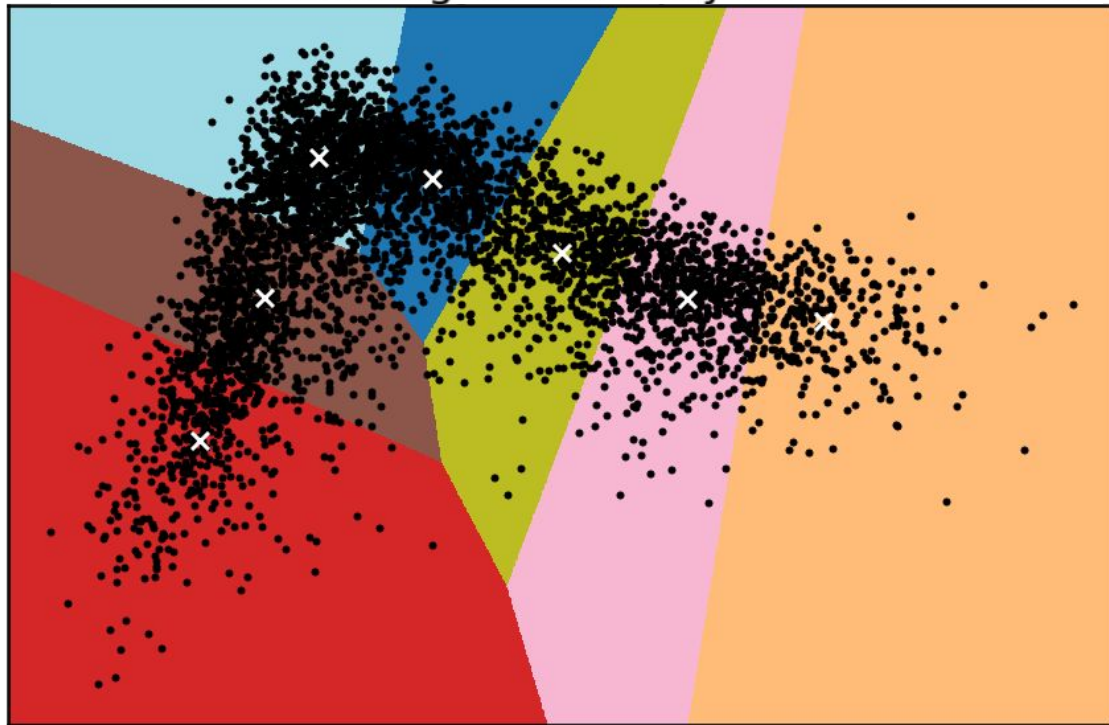
New Positional Makeup

New Positional Makeup

Positions Assigned to Cluster 1
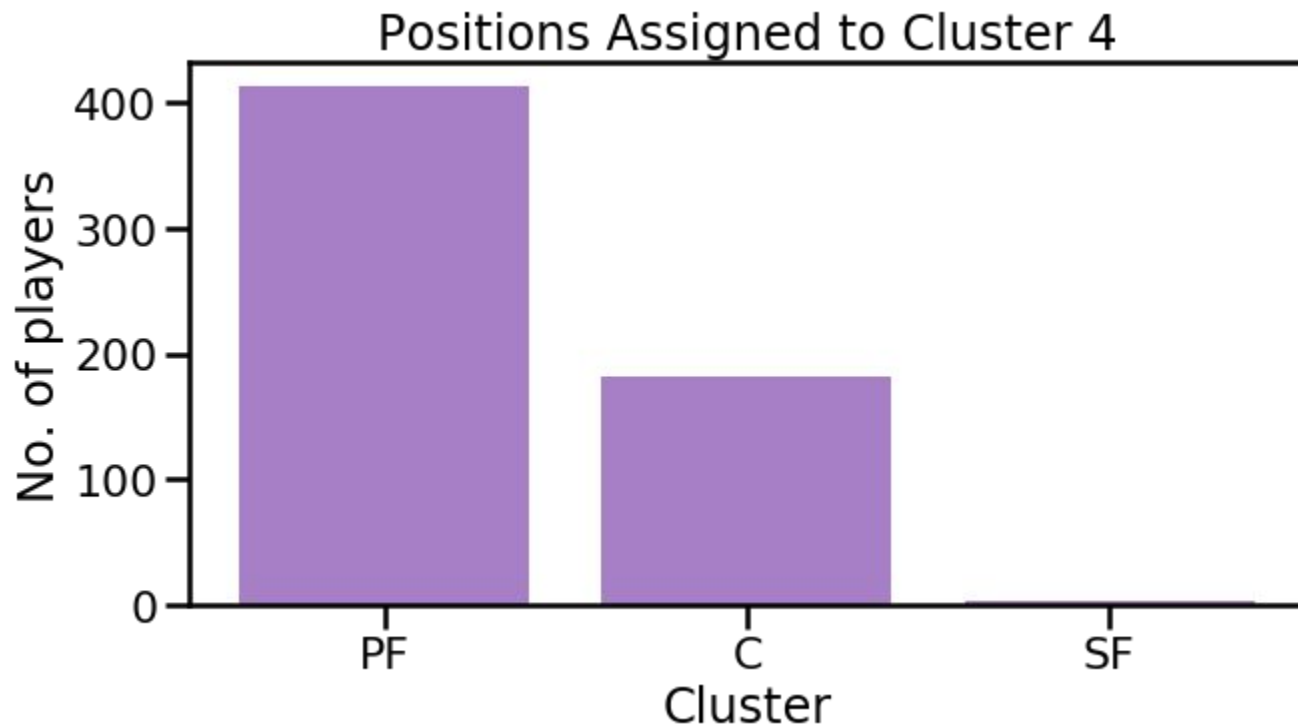
New Positional Makeup

Positions Assigned to Cluster 2

New Positional Makeup

Positions Assigned to Cluster 3

New Positional Makeup

Positions Assigned to Cluster 4

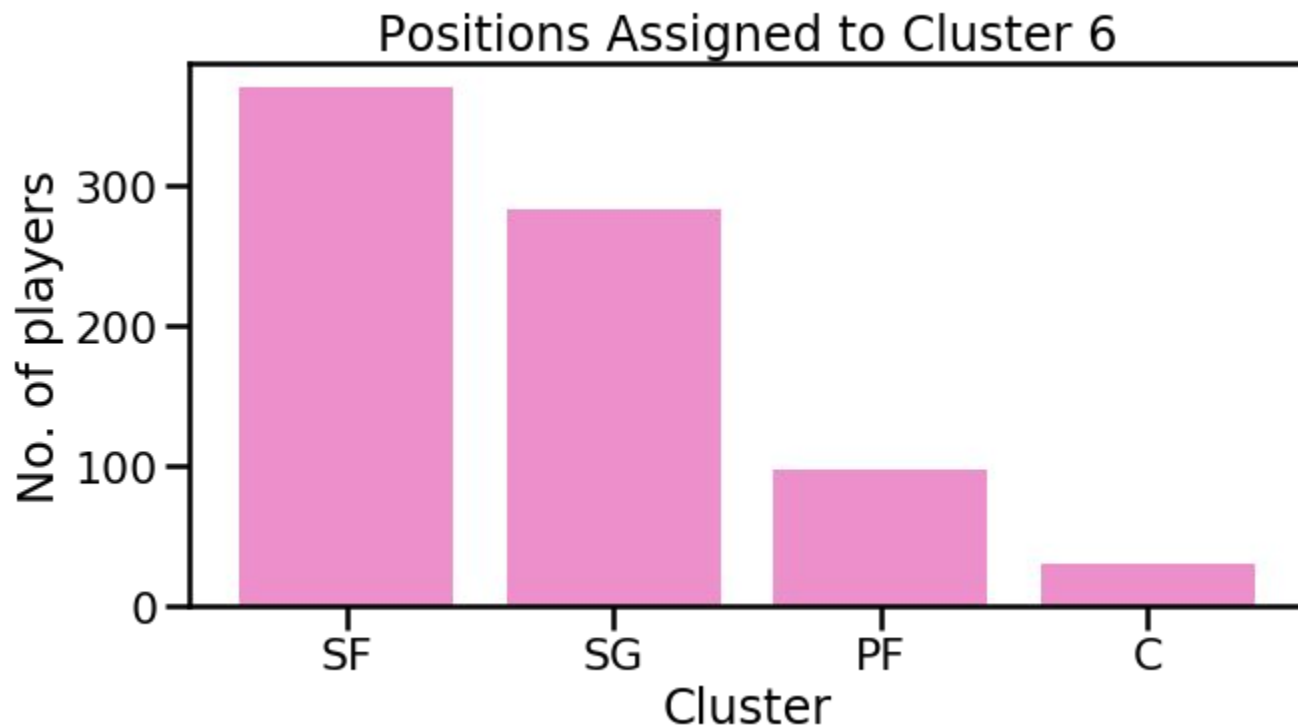# New Positional Makeup

Positions Assigned to Cluster 5

New Positional Makeup

Positions Assigned to Cluster 6
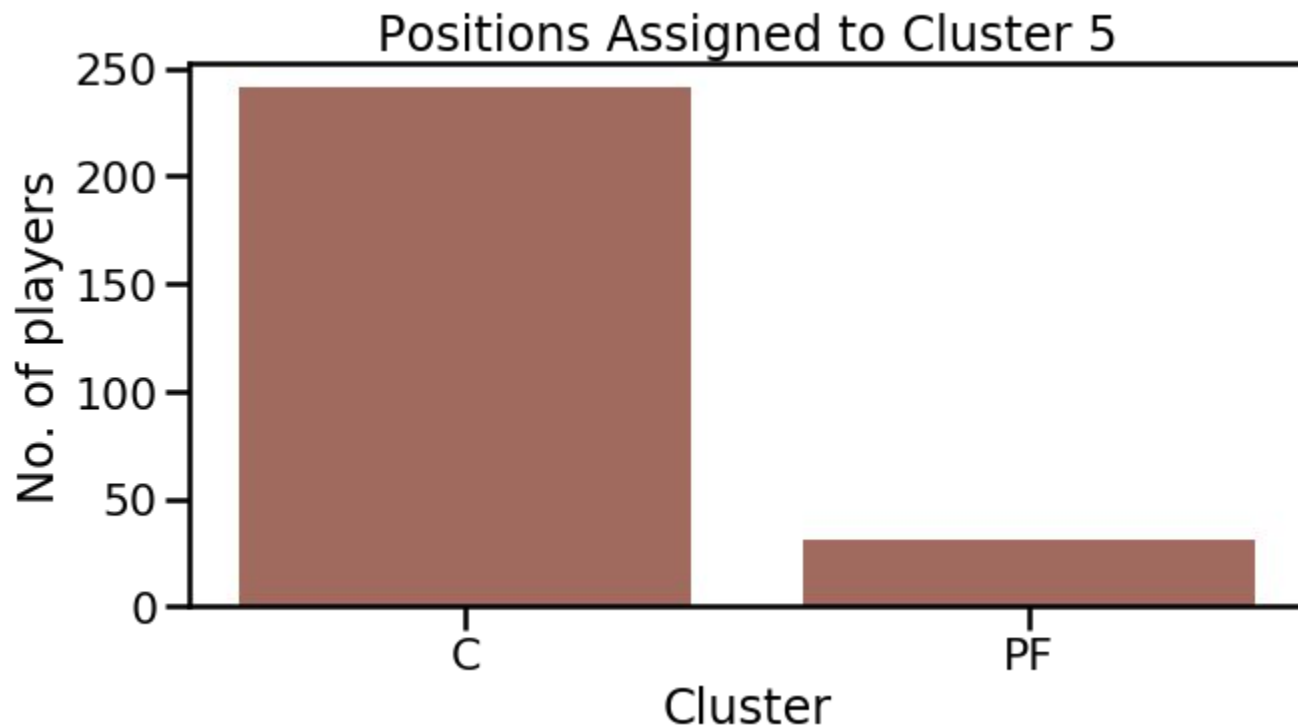
NEXT STEPS

- Define New Positionality
- GMM - Gaussian Mixture Model
  - Probability of belonging to clusters
- International Stats
- Flask

CONTACT

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