UNIVERSIDAD DISTRITAL
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Systems Analysis and Design
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NCAA Basketball Tournament - Systems Analysis

1 Competition Overview

The "March Machine Learning Mania 2025" competition is a prominent prediction challenge on Kaggle that invites participants to forecast the outcomes of the 2025 NCAA men's and women's basketball tournaments. It is a skills-based competition designed to promote and advance the field of data science. The NCAA Basketball Tournament is one of the most prestigious college basketball competitions in the United States. It involves multiple conferences, teams, and stakeholders, also including coaches, referees, and spectators. The goal of this analysis is to understand the system dynamics and interactions within this tournament.

2 Systems Analysis Report

2.1 Systemic Anlaysis

2.1.1 Identification of Key Elements

The NCAA Basketball Tournament Forecasting system comprises the following essential components:

- **Season:** The entire period during which the NCAA® tournament takes place, this includes the regular season, conference tournament, and NCAA® tournament.
- **Conferences:** Groups of teams based on region or category.
- **Regions:** Groups of cities.
- **Teams:** Participating teams.
- **Coach:** The head coach of each team.
- **Match:** Individual games within the tournament.
- **Cities:** Locations where the games are played.
- **Referee:** Officials in charge of the matches.

- **Fans:** Supporters and spectators.
- **Field:** Courts where the matches are played.
- **Forecasting System:** The system responsible for the Tournament Forecast.

2.1.2 Mapping Relationships

The tournament's elements interact in various ways:

The **Season** is the entire period in which the NCAA tournament takes place, this includes the regular season, conference tournament, and NCAA® tournament.

The **Conferences** are divisions within the regular season.

The **Conferences** are made up of **Teams**.

The **Coach** trains the **Teams** for the **Matches**.

The **Matches** are played on **Fields** in different **Cities**.

Each **Match** includes **Fans** and **Referees**.

The **Forecasting System** is influenced by the fans, the referees, the field and the city where the match is played, the events within the game and so on.

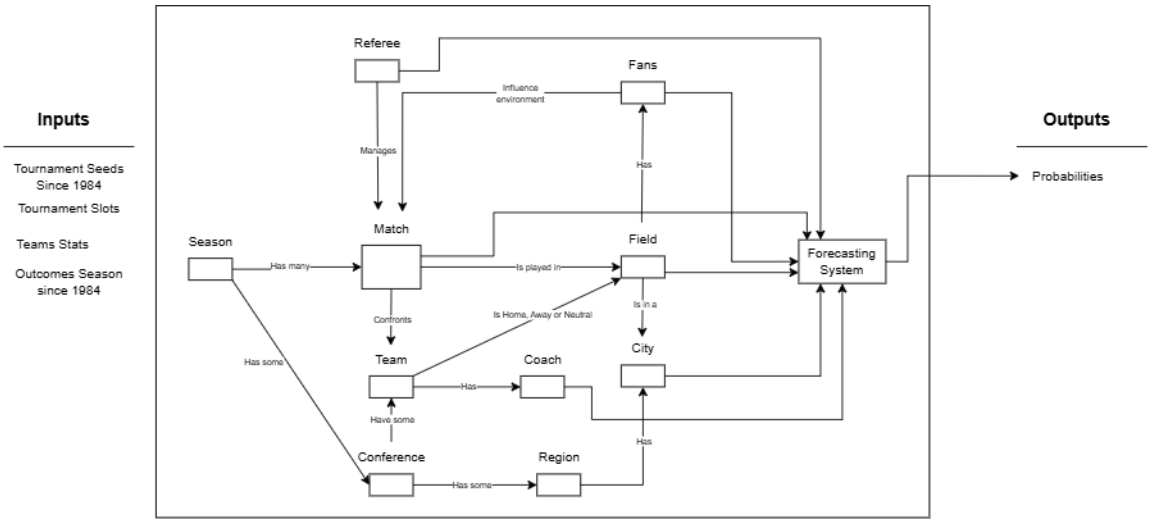

Figure 1: Diagram (svg file in repository)

2.2 Complexity and Sensitivity

Depending on the **Coach**, the **Team** plays with a specific strategy, and may have an advantage over some of the other teams.

Depending on the **City** and the **Field Teams** may perform differently.

The **Team Slots** and **Team Seeds** also influences the **MNCAA** tournament

because if it changes, the matches will be different.
Also the state of the Team plays an important role, whether it is home, away, or neutral.
All this elements or situations have an influence on the **Forecasting System**.

2.3 Chaos and Randomness

Favoritism or poor decisions from the **Referee**.
Conditions of the **Field**.
The **Fans** on the Field, although unpredictable in their behavior, some fall into repetitive patterns such as chants, reactions, etc.
Technical failures in the **Field**.
Teams' logistical failures.

2.4 Conclusion

This analysis shows that the NCAA Basketball Tournament Forecast System is a complicated system made up of many different parts. Things like fans and coaching decisions can have a big effect on forecasting. Also, the results of the games are often difficult to predict because of something called 'chaos theory'.