Jonathan Greenberg

1. Research hot hand in basketball

Is there such thing as having a hot streak in basketball?

What are the differences in percentages on the first free throw vs the second free throw?

Do players shoot better after making a free throw or after missing one.

Machine learning aspect: Can I predict the success of a player’s next shot?

Statistical topics covered: Markov chains, binomial distributions.

<https://en.wikipedia.org/wiki/Hot_hand>

2. Injuries in basketball

Do injuries correlate with minutes played?

Do injuries correlate with rest days/schedule density?

ML Aspect: Can I predict when a player is at risk for an injury and when…?

Additional thoughts: Encode different kinds of injuries (feature engineer) between soreness vs day-to-day injuries vs and then predict based on minutes played and distance run.

<https://www.kaggle.com/ghopkins/nba-injuries-2010-2018>

3. Physical Attributes vs Talent

Size vs shooting abilities; wingspan vs blocks; weight vs shooting, speed; hand size; shooting, blocks; height vs dunks. This is more of a statistics approach. Take into account a physically blessed score, so the people who are the best in the league with the least amount of physical best stuff are the most “skilled” or “talented”?

Give them a talent score and a physically blessed score. Then bucketize players and cluster them, feature comparison. Try creating an embedding of players. So we can do like a Chris Paul + Kristaps Porzingis = LeBron in some fashion.

<https://www.ncbi.nlm.nih.gov/pubmed/19530751>

4. College Player Success rating in NBA

Based on college stats predict how good a player will be in the NBA

Use all college stats and how good the team was in NCAA and predict success in NBA.

Questions to consider: what is success in the nba? Career lasting longer than 5 years, averaging more than 10 or 20 points in the league. Being an all star. Odds of them being an all star. Data on top 100 players in the league. Draft combine stats too.

ML: Predict NBA draft picks.