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| **Proposal**  **Description** | **Team Case Proposal**  **NBA Team Efficiency Improvements** |
| **Proposal**  **Contact**  **Information** | **Group 1**  Bhavika Patil [patilb@mcmaster.ca](mailto:patilb@mcmaster.ca)  Cindy Guo [guo1@mcmaster.ca](mailto:guo1@mcmaster.ca)  Dennis Hung [hungd@mcmaster.ca](mailto:hungd@mcmaster.ca) |
| **Proposal Date**  **Submission** | 2021-03-04 |
| **Business Goal** | The Toronto Raptors are an NBA championship team with a $2.5 billion market capitalization that is in decline after being crowned 2019 NBA champions. They were able to add key players in their run that year which allowed them to edge out critical wins in the playoffs.  Being heavy in the data analytics department, the team’s management are seeking fresh perspectives in order to increase their chances at another championship run but not at the cost of their future.  Currently, the team is looking for marginal/minor improvements to the player roster to either maintain or improve on the number of seasonal wins. The organization is looking to rebuild the core team players and more importantly maintain the public’s interest and/or improve the team’s performance. |
| **Analytics**  **/ Data Mining**  **Goal** | To fulfill the requirements outlined by management, we are looking to determine what features affect team wins/losses and how this can be improved/reduced through changes in the team’s roster. |
| **Data** | NBA API created by Swar Patel will be used to gather historical NBA statistics from nba.com or alternate sources for this analysis. As this will deal with team wins / losses, classification models will be selected and reduced to 3 possible models.  Example of possible features |
| **Implementation / Production** | * Operational requirements or constraints (who exactly will use your model, data or system and how? * Will the solution run in real-time? * Will it require collecting new data? * One-time analysis or ongoing?   The modeling report is targeted for used by the General Manager group and/or scouting team to narrow down the search for role players based on the features important to improving the team roster |
| **Deliverable** | A report / presentation on the results of this analysis to determine the factors that either improve on team wins or reduce team losses |
| **References / Backup** | * Submit a draft bibliography/list of websites, data resources, etc. * Submit list of mentors, or requested mentors * Submission will be due online via Avenue2Learn.   **Option 1: NBA Team Efficiency Improvements**  (Jee, 2019)  (Patel, 2020) Bibliography Jee, K. (2019, December 22). *How to Get NBA Data Using the nba\_api Python Module (Beginner).* Retrieved from Playing Numbers: https://www.playingnumbers.com/2019/12/how-to-get-nba-data-using-the-nba\_api-python-module-beginner/  Patel, S. (2020, August 19). *swar / nba\_api.* Retrieved from GitHub: https://github.com/swar/nba\_api/blob/master/docs/table\_of\_contents.md  **Option 2: NYC Motor Collision Reduction Analysis** Bibliography New York City P New York City Police Departmentolice Department. (2021). *Motor Vehicle Collisions.* Retrieved from New York City Police Department: https://www1.nyc.gov/site/nypd/stats/traffic-data/traffic-data-collision.page  Police Department (NYPD). (2021, 03 1). *Motor Vehicle Collisions - Crashes.* Retrieved from NYC OpenData: https://data.cityofnewyork.us/Public-Safety/Motor-Vehicle-Collisions-Crashes/h9gi-nx95  **Option 3: NYC Taxi Allocation Efficiencies**  (NYC Taxi & Limousine Commission, 2020) Bibliography NYC Taxi & Limousine Commission. (2020). *NYC Taxi & Limousine Commission.* Retrieved from www1.nyc.gov: https://www1.nyc.gov/site/tlc/about/tlc-trip-record-data.page |

Option 1

Data gathering

<https://www.canadabasketballanalytics.com/2020/08/18/how-to-pull-nba-player-gamelog-data-using-python-and-nba_api/>

<https://www.analyticsvidhya.com/blog/2019/05/scraping-nba-data-analyze-1000-basketball-games-python/>

<https://www.kaggle.com/schmadam97/nba-playbyplay-data-20182019>

<https://www.nba.com/game/por-vs-cha-0021800944/play-by-play>

Glossary

<https://jr.nba.com/how-to-read-a-box-score/>

[https://www.basketball-reference.com/about/glossary.html#:~:text=TOV%25%20%2D%20Turnover%20Percentage%20(available,0.44%20\*%20FTA%20%2B%20TOV).&text=Total%20rebound%20percentage%20is%20an,%2F%20(2%20\*%20TSA)](https://www.basketball-reference.com/about/glossary.html#:~:text=TOV%25%20%2D%20Turnover%20Percentage%20(available,0.44%20*%20FTA%20%2B%20TOV).&text=Total%20rebound%20percentage%20is%20an,%2F%20(2%20*%20TSA)).

<https://bleacherreport.com/articles/1813902-advanced-nba-stats-for-dummies-how-to-understand-the-new-hoops-math>

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

Option 3

<https://toddwschneider.com/posts/analyzing-1-1-billion-nyc-taxi-and-uber-trips-with-a-vengeance/>