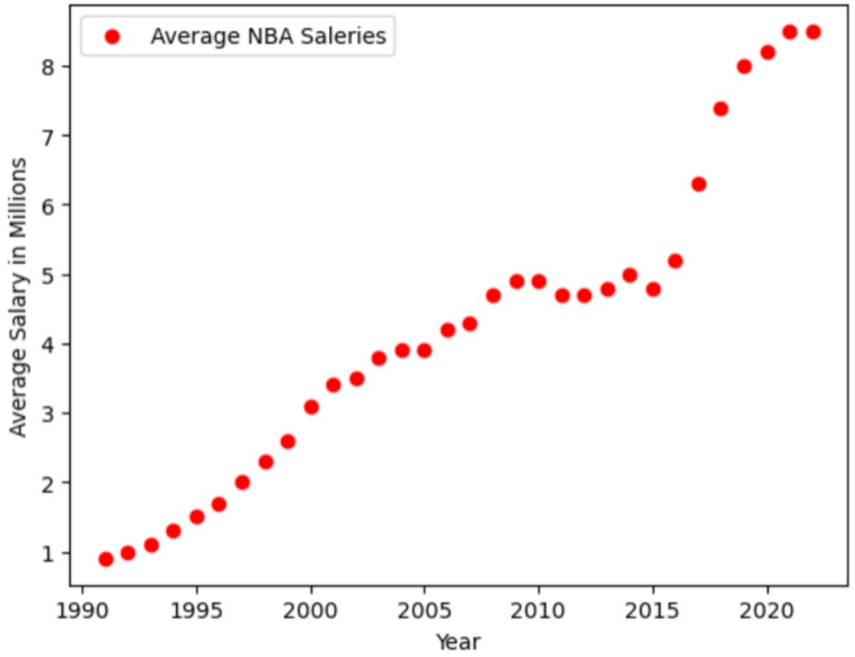
Predicting NBA Salaries for the Next 20 Years.

Amaan Thasin

Background / Motivation

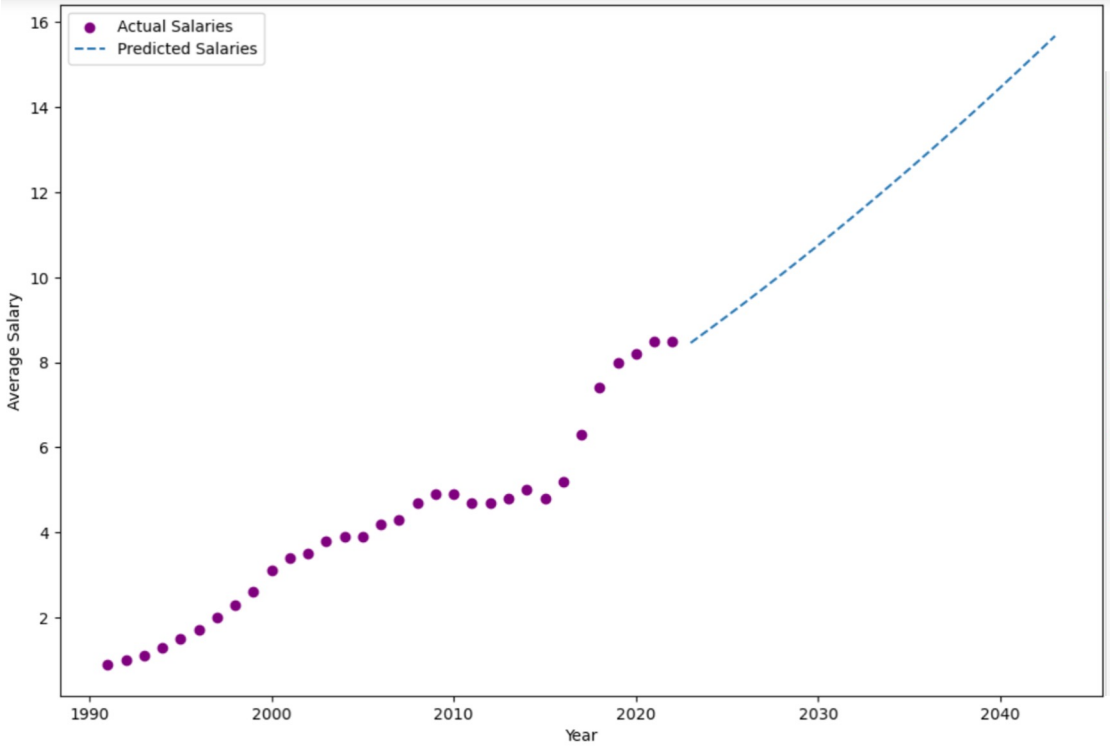
- I am a die hard basketball fan and I think every kid has a dream to play in the NBA. As a kid you don't think about the money, but at an older age, when you look and see what the average player makes, it blows your mind away.
- Mike Conley in 2016 signed the richest contract in NBA History, 5 year 151 million dollar contract.
- Just this past summer there was a new richest contract in NBA history. Denver Nuggets superstar Nikola Jokic signed a 5 year 272 million dollar contract.
- So this left me curious how will the average NBA Salaries look like for the next 20 years?

NBA Salaries from 1990 - 2022




```python
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
figsize=(12,8)
NBA_SAL = pd.read_csv('UPDATED_NBA_Saleries.csv')
NBA_SAL.head()
year = NBA_SAL['Year']
salary = NBA_SAL['Average Salary']

# Plot the data
plt.scatter(year, salary, color ='r', label = 'Average NBA Saleries')


# Set the x-axis and y-axis labels
plt.xlabel('Year')
plt.ylabel('Average Salary in Millions')
# Show the plot
plt.legend()
plt.show()
```

NBA Salaries from 2023-2043



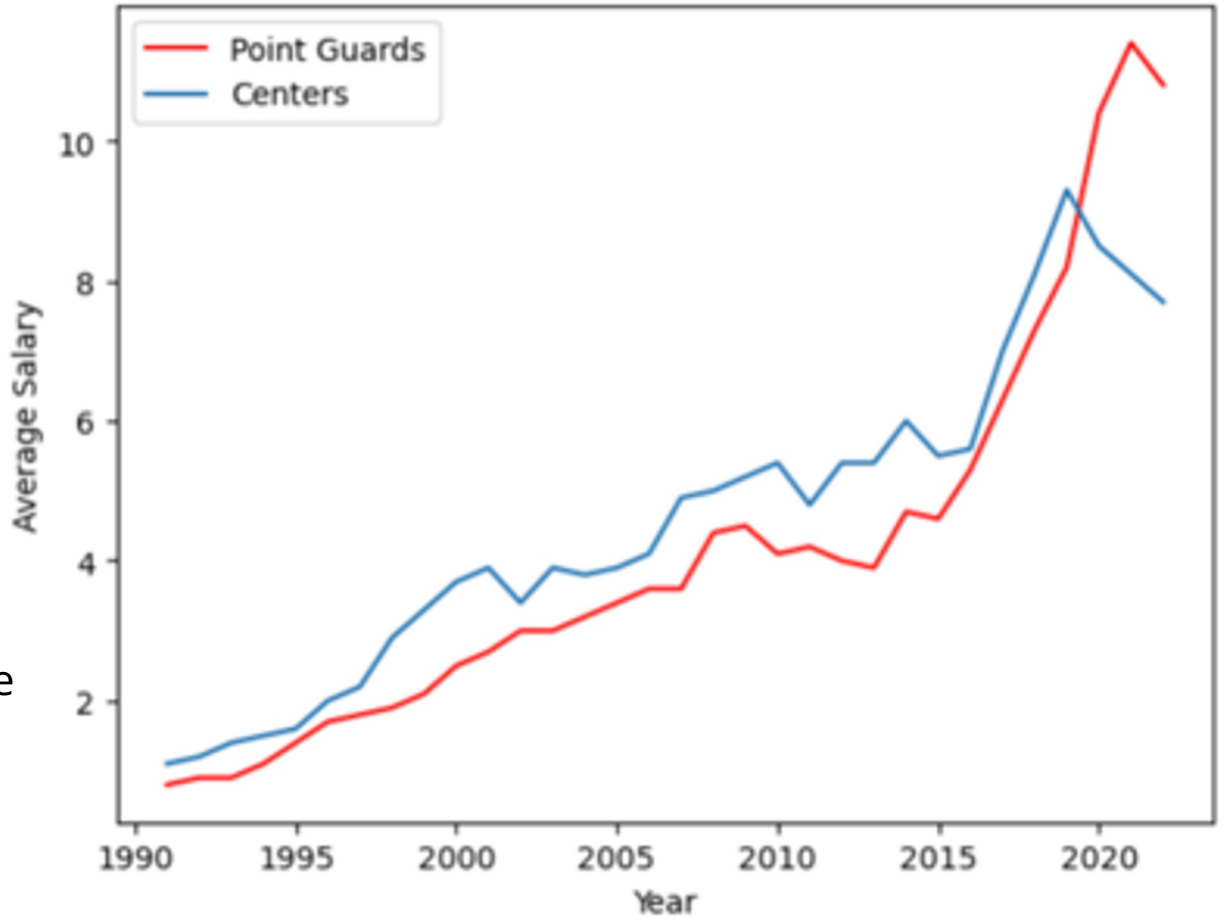

```python
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
from scipy.optimize import curve_fit

NBA_SAL = pd.read_csv('UPDATED_NBA_Saleries.csv')
year = NBA_SAL['Year']
salary = NBA_SAL['Average Salary']

# Define the function to fit, I found quad function as the most logical
def quad(x, a, b, c):
    return a*x**2 + b*x + c

# This is what fits the function to the data
popt, pcov = curve_fit(quad, year, salary)

# This is what creates predictions for the years 2023-2044
future_years = np.arange(2023, 2044)
future_salary = quad(future_years, *popt)

# Plotting the data/curve fit line
plt.figure(figsize=(12,8))
plt.scatter(year, salary, label='Actual Salaries', color = 'purple')
plt.plot(future_years, future_salary, '--', label='Predicted Salaries')
plt.xlabel('Year')
plt.ylabel('Average Salary')
plt.legend()
plt.show()
```

Results

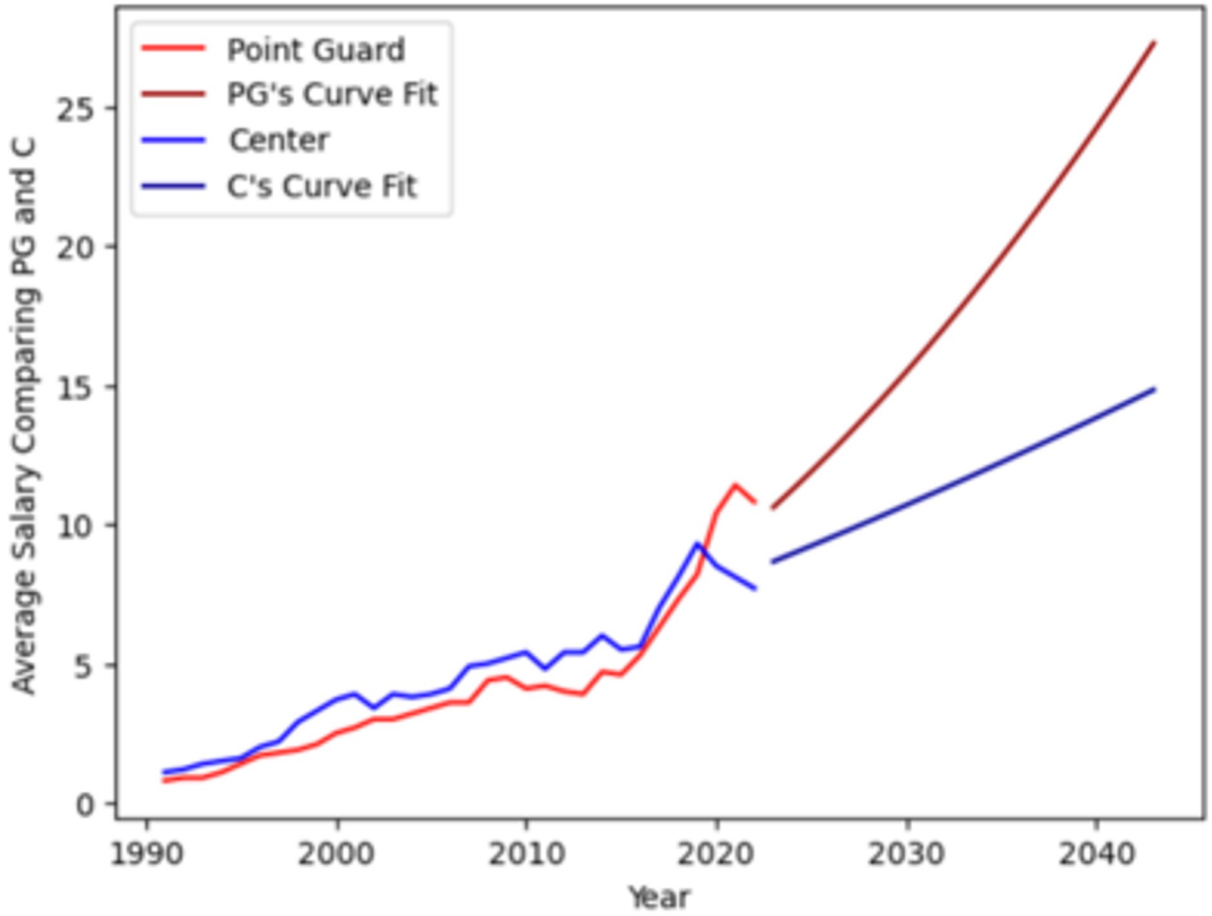
- So as expected, the salaries go up a lot. I will say I originally used a polynomial function and I felt like the salaries were way too high. The average salaries in 2043 was going to be closed to 40 million, that just didn't feel right. So quadratic made most sense to use.
- Now I will say it is unfair to only look at the average salaries for all combined positions because each position gets paid different. So I decided to compare the point guard and center position.

Point Guard vs Center Salaries from 1990 - 2022

Centers dominated the NBA in terms of salaries but suddenly there was a change in around 2018. Why is that though?



Point Guard vs Center Salaries from 2023 - 2043

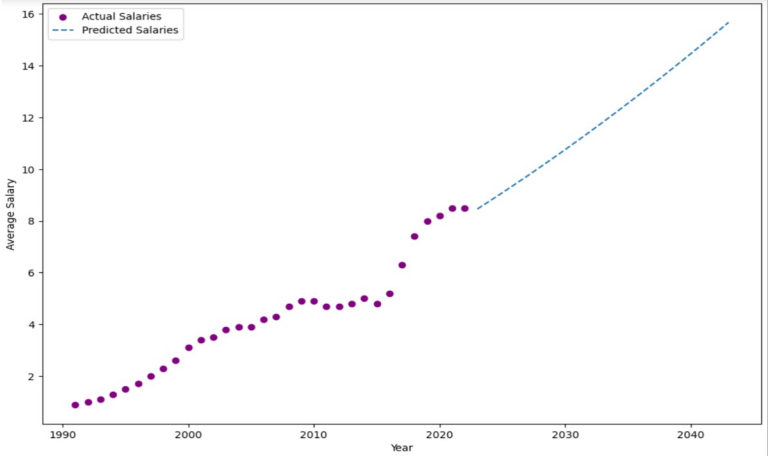


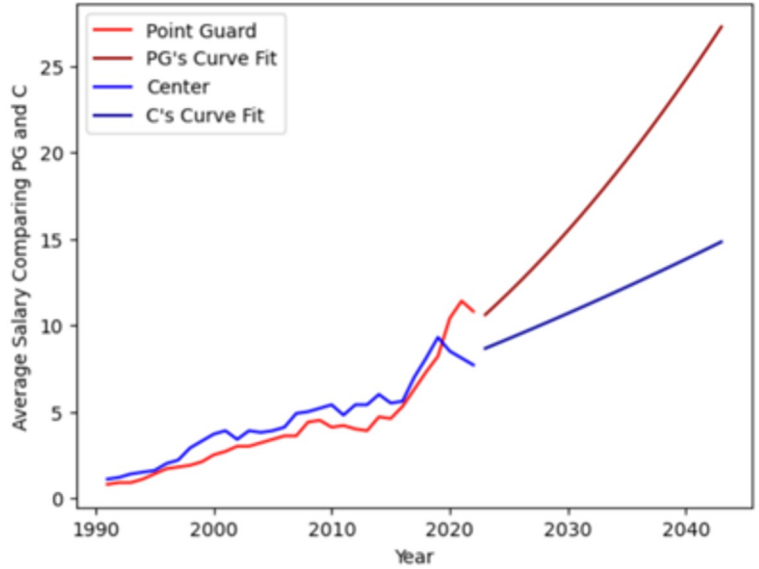
Conclusion

- I learned that the future of the NBA is surrounding the point guard position. The NBA was dominated by centers from the beginning until the mid 2010s. The game has changed and that is because of one man. His name is Stephen Curry. The evolution of the three ball changed the game forever. In today's NBA, this is teams primary way of scoring today. The traditional center has no type of shot package, they simply can't survive in today's game.

- In the future, there will be more and more all star caliber players that will be getting paid like how superstars get paid today. For example Mike Conley getting paid 5 years 150 million in 2016 is so minimal compared to today's all star caliber player, Jalen Brunson and Shai Gilgeous-Alexander. Jalen earning getting 4 year 104 million dollars and Shai getting 5 year $179,299,750 contract

- I would say the average salaries doubled based off reading the graph from 2022 to 2042. That makes sense for the center position. However the pg position nearly tripled, which also makes sense considering the game is changing drastically.





References

- https://www.thehoopsgeek.com/average-nba-salary/
- https://www.usatoday.com/story/sports/nba/2022/07/12/nba-players-salary-free-agent-contracts/10039119002/?gnt-cfr=1
- https://stackoverflow.com/questions/37765197/darken-or-lighten-a-color-in-matplotlib