International Journal of Recent Technology and Engineering (IJRTE)
ISSN: 2277-3878 (Online), Volume-7 Issue-4s, November 2018

Performance Analysis in Olympic Games using Exploratory Data Analysis Techniques

Yamunathangam.D, Kirthicka.G, Shahanas Parveen

Abstract: ***The Olympic games are international sports events with more than 200 nations participating in various competitions. The Sportspersons from various countries participate in competitions and make their countries proud of their excellence in sports. Despite massive population, many most populous countries fail to grab many medals at the Olympic games. The primary objective of this paper is to analyse the Olympic dataset using python to compare overall performance of countries and to evaluate the contribution of each country in Olympics. These analyses will give deeper insight into the performance of countries in Olympics over the years and helps sportspersons to quickly analyse their own and the competitor's performance. In this paper, the exploratory data analysis techniques are used to provide comparison between performance of various countries and the contribution of each country in Olympics. Visualization of Olympics dataset in many aspects provides the status of countries in Olympics and helps countries with poor performance to produce quality players and improve nation's performance in Olympics.***

Keywords-International, Excellence, Performance Analysis, Visualization

I. INTRODUCTION

Olympics is considered as most important event worldwide, which provides common platform to players from various nations to show their talents. Olympics has been started at 1896, which is being conducted once in every four years. The goal of this paper is to analyze performance and participation of nations in Olympics from 1896 to 2012.In addition, the field of sports of particular country in particular year, in which they have contributed the maximum can be identified. The comparison of the performance of each sports with other can be done. The field of sports ,that has to have more participation can be identified and necessary action can be taken by players and nations to enhance themselves in future contributions towards Olympics. Olympics dataset. In section 2, related works are discussed based on literature survey. Section 3 represents performance analysis and visualization. Section 4 concludes the paper with importance of analyses.

II. LITERATURE SURVEY

Performance measure for a country in Olympics can be predicted using their past performance. By predicting their win using maximum value scored by them in previous participation, the chance of winning gold in 2016 has been identified[1].If a person wins a medal in an Olympics during a year,the chance of winning a medal in upcoming Olympics was predicted[1].Having sports performance data, predicting one's future performance has been done [2].Their performance can also be increased ,if they are not performing good in certain areas and then placing them accordingly in the training program will provide considerable measure in their outcomes[2].Machine learning techniques were used for heuristics prediction of Olympic medals of a country[4].Estimation of Olympics success of a country can be done by efficiency analysis and importance of sports in society[5]. When analyzing the sports categories they are mainly being more presentive towards view point based content rather being an view point which is spatio temporal. The video content analysis has significance of providing more interior information than structured collected data [3].In addition to these techniques, the exploratory data analysis uses visual methods to provide deep understanding and statistical summary about the data .

Manuscript published on 30 November 2018.
*Correspondence Author(s)
Yamunathangam.D, Assistant Professor, Kumaraguru College of Technology, Coimbatore (Tamil Nadu), India.
Kirthicka.G, UG scholars, Kumaraguru College of Technology, Coimbatore (Tamil Nadu), India.
Shahanas Parveen.I, UG Scholars, Kumaraguru College of Technology, Coimbatore (Tamil Nadu), India.

III. ANALYSIS AND VISUALIZATION

The Summer Olympics dataset with data collections from 1896 to 2012 has been analysed[6]. This dataset contains around 30,000 rows and 9 columns.The fields include Year, Sports, Discipline, Medal, Gender, Country, City, Event and Athlete.[6]

A. Identifying Contribution of Men And Women Participants In Olympics (1896-2012)

The total number of men and women participants in Olympics from 1896-2012 is analysed and the ratio between men and women participants can be obtained. The analysis represents contribution of men is higher than women among all over the world. The figure 1 shows gender wise contribution of players in Olympics.

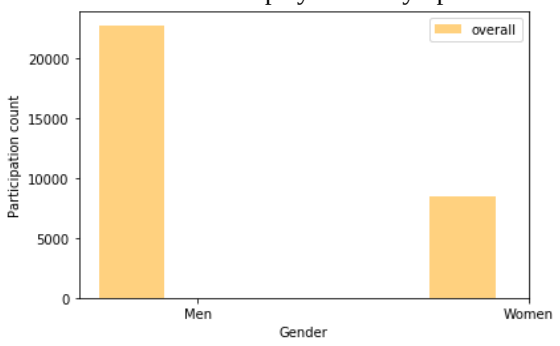

Fig 1: Gender Wise Contribution in Olympics

Published By:
Blue Eyes Intelligence Engineering and Sciences Publication (BEIESP)

B. Identifying total number of gold, silver and bronze medals won by participants in a Country in Olympics(1896-2012)

In this analysis, total number of gold, silver and bronze medals won by the participants from all countries in Olympics from 1896 to 2012 can be identified. The count includes number of individuals who were contributed separately or as a team to receive medals for their nations. The following results are obtained in the analysis. (i) USA has won the highest number of gold medals when compared to other medals and almost equal percent of silver and bronze medals. (ii)Australia has received least number of gold medals when compared to other medals and won the highest number of bronze medals. Japan has least number of gold than other medals. France has less number of gold and high number of silver and bronze medals.

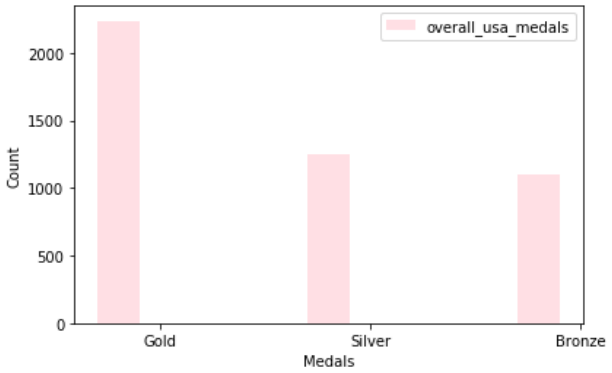

Fig 2: Total Participants of USA Contributed for Winning Medals in Olympics

C. Identifying the performance of Particular Country in Olympics (1992-2012)

Excellence of a country in Olympics can be viewed by number of medals won by a country. This analysis identifies the performance a particular country in Olympics from 1992 to 2012.This can be processed by calculating the total medals won by particular country in particular year from 1992 to 2012. Data visualization can be carried out to represent the result of particular country. The results are (i)Performance of India was gradually increasing from 1992 with no medals,1996 with 1 medal and finally in 2012 with 6 medals.(ii)Performance of USA was found like zig-zag graph from 1992 with 220 medals,1996 with 260 medals, suddenly performance has decreased in 2000 with 240 medals, increased gradually from 2004,contributed best in 2008 with 350 medals.(iii)France's Performance was gradually increasing from 1996 to 2008 with medals within range of 40 and has performed well in 2012 with 80 medals.(iv)Performance of Australia was better during 1992 Olympics with 60 medals and there was a sudden increase in its performance with almost 200 medals over the period of 2000 and there has been gradual decrease in performance from 2004 to 2012.(v) Initially, performance of Japan was not so good ,but over the period of 2000 and 2004 there was a drastic increase in it and gained 100 medals which was higher than the rest. The performance of a country is shown in figure 3.

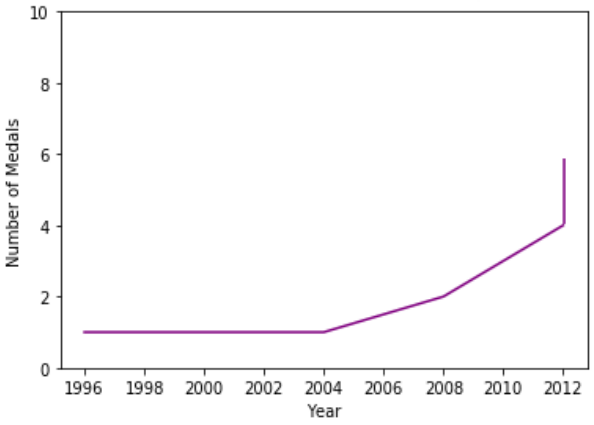

Fig 3: Performance of India in Olympics

D. Comparing the performance between the countries in Olympics(1996-2012)

The analysis compares the performance between the countries by medals won by the participants from selected countries in Olympics from 1996 to 2012.Countries such as USA, Hungary, France, Japan, Australia are selected for analysis .From this analysis, the following results has been inferred.(i)In 1996 Olympics, among the five selected countries, USA is the leading country with contribution of 7.53%,Australia is the second country with 2.25%,Japan with 1.61%,Hungary with 0.75% and France is the least country with 0.69% contibution among them.(ii)In 2000 Olympics, USA is the leading country with contribution of 6.55%,Australia is the second country with 4.019%,France with 1.58% and Hungary & Japan are the least country with 0.94% among them.(iii)In 2004 Olympics, USA is the leading country with contribution of 8.05%,Australia is the second country with 3.3%,Japan with 2.1%,France with 1.6% and Hungary is the least country with 0.9% among them.(iv)In 2008

Olympics, USA is the leading country with contribution of 8.52%,Australia is the second country with 3.72%,France with 1.71%,Japan with 1.42% and Hungary is the least country with 0.88% among them.(v)In 2012 Olympics, USA is the leading country with contribution of 8.5%,Australia is the second country with 3.01%,Japan with 1.8%,,France with 1.6% and Hungary is the least country with 0.9% among them.

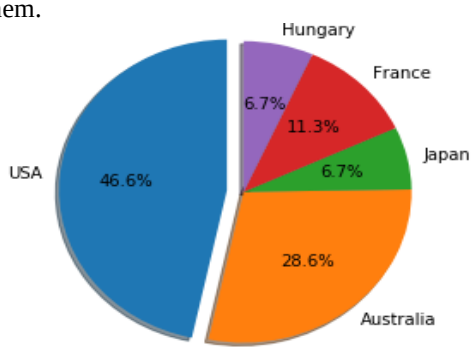

Fig 4: Comparing the Performance of Selected Countries in Olympics

Published By:
Blue Eyes Intelligence Engineering
and Sciences Publication (BEIESP)

E. Identifying the Best Performed Field of Sports for Particular Country in Olympics (2000-2012)

The analysis represents the performance from participants of particular country and their best performed field of sport in Olympics from 2000 to 2012.To identify field of sports of particular country in particular year and to analyse which field of sport has to have more participation. This provides information to enhance themselves in future contributions towards Olympics.(i) In 2000,USA has performed best in the field of Aquatics and has performed least in the field of Weightlifting.(ii) In 2000,Australia has performed best in the field of Aquatics and has performed least in the field of Gymnastics.(iii)In 2000,France has performed best in the field of Fencing and has performed least in the field of Tennis.(iv)In 2000,Australia has performed best in the field of Aquatics and has performed least in the field of Athletics.

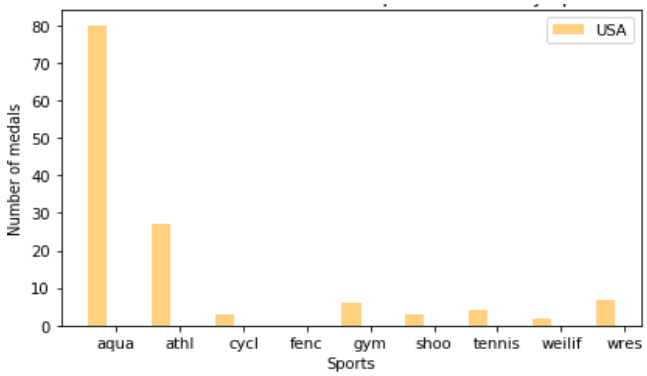

Fig 5: Performance of USA in the Year 2000

F. Comparison of Overall Performance of Selected Countries with India in Olympics (1896-2012)

This analysis helped to find the performance of Selected countries and compare those with a particular country. Here India's performance was compared with USA, Hungary, France, Germany, France. This has been carried out by finding the percentage of medals won by each countries. The resulted percent has been plotted to analyze the performance. Among the selected countries, USA is the top most country with 53.6%which has contributed higher than other countries. India is one which has least percent of 2.2%.France is next to USA with 16.3%,Germany is the next to France with 15.3%.Hungary with 12.6%.

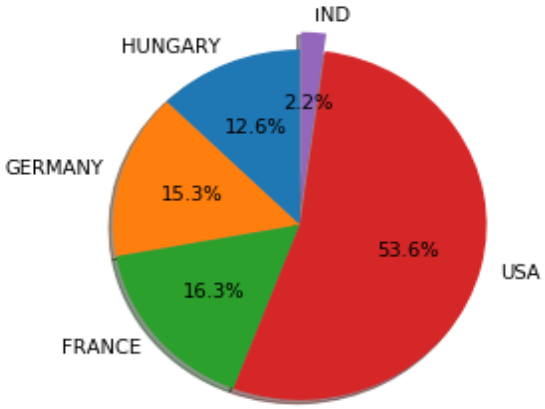

Fig 6: Comparing the Performance of India with Selected Countries

G. Analyzing the Highest Performance of a Country in Given Period From 1996 to 2012

From this analysis, USA has performed well in Olympics 2012 compared to other years. Australia has performed well in Olympics 2000.France has performed well in Olympics 2008 compared to others. Japan has performed well in the year 2004.Hungary's performance was good in the Olympics conducted in the year 2004.

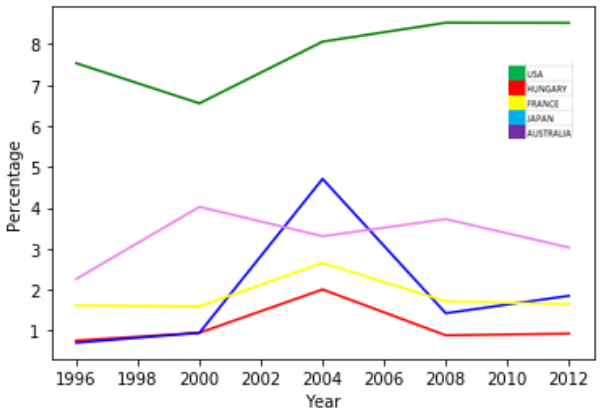

Fig 7: Highest Performance of a Country in Olympics from 1996 to 2012

IV. CONCLUSION

The exploratory data analysis on Olympic dataset provides statistical and visual representation of performance of nations, players in Olympics from the year 1896 to 2012.From the above analyses,it is useful to identify the country that needs more skills, the field of sports in which players are performing well and players who need practice to enhance themselves in upcoming Olympics. The contribution of women in Olympics have to be encouraged. Country which has least performance have to find the steps to improve their performance . Country which has performed best so far will also consider to take measures to increase their performance.

REFERENCES

1. Antarlina Sen and Gaurang Margaj,"A prediction model for which country will win highest number of 'Gold' , 2016
2. Leonardo De Marchi,"Data mining of Sports performance data", 2011.
3. Huang-Chiashih,"Survey on content-aware Video Analysis for Sports" , IEEE Transactions on Circuits and Systems for Video Technology, Vol. 99, No. 9, January 2017.
4. Chandra Segar Thirumalai and Monica Sankar,"Heuristic Prediction of Olympics using Machine Learning" , International Conference on Electronics, Communication and Aerospace Technology ,April 2017.
5. Alexander Rathke and Ulrich Woitek,"Economics and Olympics: An Efficiency analysis" , January 2007.
6. Summer Olympics Dataset, Available: https://www.kaggle.com/the-guardian/olympic-games/data

Published By:
Blue Eyes Intelligence Engineering
and Sciences Publication (BEIESP)