



# Data Science

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**Data Science** is an interdisciplinary field that uses **scientific methods, processes, algorithms and systems to extract knowledge** and insights from structured and unstructured data, and **apply knowledge** and actionable insights from data across a broad range of application domains.

## Related Fields:

- Data mining
- Data visualization
- Machine Learning
- Deep Learning



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**Machine Learning** is a method of **data** analysis that automates analytical model building. (The learning happens through data)

**Artificial Intelligence:** Intelligence exhibited by machine or software. (The learning happens without data too, may be with observations) (**ML** is a subset of **AI**)

*Data is not the only important thing. ML algorithms are also equally important. (E.g. IMDB, YouTube, Shopping recommendations)*

**Data Mining** is a process of extracting and discovering patterns in a **large** sets involving methods at the intersection of ML, statistics and DB. (Process to turn the row data into useful information)

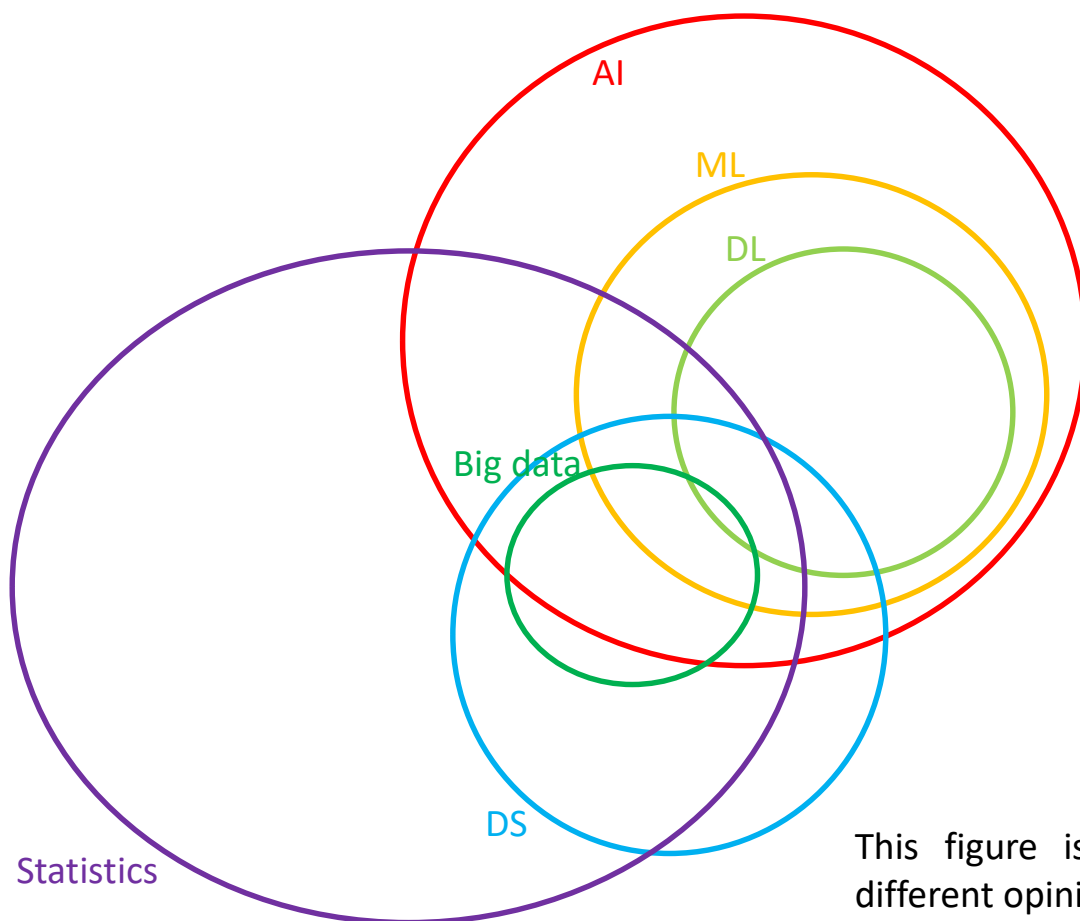
**Deep Learning** is a subfield of ML concerned with algorithms inspired by the structure and functions of the brain called ANN.

**Data Visualization** is a graphical (charts, graphs, maps etc) representation of data to understand trends, outliers, patterns in the data so that we can make decision/conclusions. (E.g. Charts shown during Cricket match) [Python Libraries: matplotlib, seaborn]



# The Overall Picture

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This figure is debatable as different experts have different opinions on this



# Data Science Applications

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- Sports Analysis (E.g. <https://www.espnccricinfo.com/>)
- Medicine Selection
- Share market prediction/estimation
- Consumers' buying patterns (E.g. <https://www.amazon.in/>, <https://www.flipkart.com/>, <https://www.makemytrip.com/>)
- Automated Advertisement (everywhere, on social media, on google search, on email etc.)
- Pharmaceutical
- Agriculture
- Engineering