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<https://livebook.manning.com/book/introducing-data-science>

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<p>Unit I Introduction to Data Science Defining data science and big data, Recognizing the different types of data, Gaining insight into the data science process, Data Science Process: Overview, Different steps, Machine Learning Definition and Relation with Data Science</p>	<ul style="list-style-type: none"> <li>● <a href="https://youtu.be/ZmCBF5JXOPM">https://youtu.be/ZmCBF5JXOPM</a>,</li> <li>● <a href="https://youtu.be/nggtsQkYiGg">https://youtu.be/nggtsQkYiGg</a>,</li> <li>● <a href="https://youtu.be/tA42nHmEKw">https://youtu.be/tA42nHmEKw</a>,</li> <li>● <a href="https://youtu.be/dzIUB8Ks-zs">https://youtu.be/dzIUB8Ks-zs</a>,</li> <li>● <a href="https://livebook.manning.com/book/introducing-data-science/chapter-1/">https://livebook.manning.com/book/introducing-data-science/chapter-1/</a>,</li> <li>● <a href="https://www.kdnuggets.com/2016/11/big-data-data-science-explained.html">https://www.kdnuggets.com/2016/11/big-data-data-science-explained.html</a>, <a href="https://youtu.be/Is25nE5RyG8">https://youtu.be/Is25nE5RyG8</a>,</li> <li>● <a href="https://youtu.be/fKpj_6AZCb8">https://youtu.be/fKpj_6AZCb8</a>,</li> <li>● <a href="https://www.kdnuggets.com/2016/03/data-science-process.html">https://www.kdnuggets.com/2016/03/data-science-process.html</a></li> <li>● <a href="https://livebook.manning.com/book/introducing-data-science/chapter-3/">https://livebook.manning.com/book/introducing-data-science/chapter-3/</a></li> </ul>
<p>Unit II Statistics and Probability basics for Data Analysis Statistics: Describing a Single Set of Data, Correlation, Simpson’s Paradox, Some Other Correlational Caveats, Correlation and Causation Probability : Dependence and Independence, Conditional Probability, Bayes’s Theorem, Random Variables, Continuous Distributions, The Normal Distribution, The Central Limit Theorem</p>	<ul style="list-style-type: none"> <li>● <a href="https://youtu.be/vdwxlpbytao">https://youtu.be/vdwxlpbytao</a>,</li> <li>● <a href="https://youtu.be/eRgeKID7Er8">https://youtu.be/eRgeKID7Er8</a>,</li> <li>● <a href="https://youtu.be/AE7Ar8VyZCo">https://youtu.be/AE7Ar8VyZCo</a></li> <li>● <a href="https://youtu.be/Az7RAY-BpwQ">https://youtu.be/Az7RAY-BpwQ</a>,</li> <li>● <a href="https://www.britannica.com/topic/Simpsons-paradox">https://www.britannica.com/topic/Simpsons-paradox</a>,</li> <li>● <a href="https://www.kdnuggets.com/2020/09/simpsons-paradox.html">https://www.kdnuggets.com/2020/09/simpsons-paradox.html</a>,</li> <li>● <a href="https://towardsdatascience.com/simpsons-paradox-and-interpreting-data-6a0443516765">https://towardsdatascience.com/simpsons-paradox-and-interpreting-data-6a0443516765</a>,</li> <li>● <a href="https://online.stat.psu.edu/stat100/lesson/5/5.3">https://online.stat.psu.edu/stat100/lesson/5/5.3</a>, <a href="https://youtu.be/Sky_G41I9F8">https://youtu.be/Sky_G41I9F8</a>,</li> <li>● <a href="https://livevideo.manning.com/search/92_2_12">https://livevideo.manning.com/search/92_2_12</a></li> <li>● <a href="https://youtu.be/YGoGN7WPehE">https://youtu.be/YGoGN7WPehE</a>,</li> <li>● <a href="https://youtu.be/y_tc0uwApv4">https://youtu.be/y_tc0uwApv4</a>,</li> <li>● <a href="https://youtu.be/sSmpg245OuQ">https://youtu.be/sSmpg245OuQ</a>,</li> <li>● <a href="https://youtu.be/QVQWOeGseDE">https://youtu.be/QVQWOeGseDE</a>,</li> </ul>
<p>Unit III Data Analysis in depth Data Analysis Theory and Methods: Clustering –Overview, K-means- overview of method, determining number of clusters, Association Rules- Overview of method, Apriori algorithm, evaluation of association rules, Regression-Overview of linear regression method,</p>	<ul style="list-style-type: none"> <li>● <a href="https://youtu.be/WF9hVgUOgP4">https://youtu.be/WF9hVgUOgP4</a>,</li> <li>● <a href="https://youtu.be/ZTP6b3LaVGg">https://youtu.be/ZTP6b3LaVGg</a></li> <li>● <a href="https://youtu.be/YZdmbzLyrZQ">https://youtu.be/YZdmbzLyrZQ</a></li> <li>● <a href="https://youtu.be/_Z5tZuVskaQ">https://youtu.be/_Z5tZuVskaQ</a></li> <li>● <a href="https://youtu.be/hEQkqpmTx-Y">https://youtu.be/hEQkqpmTx-Y</a></li> <li>● <a href="https://youtu.be/QHLDplWYDGM">https://youtu.be/QHLDplWYDGM</a>,</li> <li>● <a href="https://youtu.be/4l4_BREP6ZI">https://youtu.be/4l4_BREP6ZI</a>,</li> <li>● <a href="https://youtu.be/Gmomzn1U0F0">https://youtu.be/Gmomzn1U0F0</a>,</li> </ul>

<p>model description. Classification- Overview, Naïve Bayes classifier</p>	<ul style="list-style-type: none"> <li>● <a href="https://youtu.be/iNENvQBUfhc">https://youtu.be/iNENvQBUfhc</a>,</li> </ul>
<p>Unit IV Advanced Data Analysis Means Decision Trees: What Is a Decision Tree? Entropy, The Entropy of a Partition, Creating a Decision Tree,  Random Forests Neural Networks : Perceptrons, Feed-Forward Neural Networks, Backpropagation, Example: Defeating a CAPTCHA MapReduce : Why MapReduce? Examples like word count and matrix multiplication</p>	<ul style="list-style-type: none"> <li>● <a href="https://youtu.be/VsYKqOokgaE">https://youtu.be/VsYKqOokgaE</a>,</li> <li>● <a href="https://youtu.be/4l4_BREP6Zl">https://youtu.be/4l4_BREP6Zl</a>,</li> <li>● <a href="https://youtu.be/ZRZHwn-X10A">https://youtu.be/ZRZHwn-X10A</a>,</li> <li>● <a href="https://towardsdatascience.com/entropy-how-decision-trees-make-decisions-2946b9c18c8">https://towardsdatascience.com/entropy-how-decision-trees-make-decisions-2946b9c18c8</a>,</li> <li>● <a href="https://www.datacamp.com/community/tutorials/random-forests-classifier-python">https://www.datacamp.com/community/tutorials/random-forests-classifier-python</a>,</li> <li>● <a href="https://builtin.com/data-science/random-forest-algorithm">https://builtin.com/data-science/random-forest-algorithm</a>,</li> <li>● <a href="https://youtu.be/jTzJ9zjC8nU">https://youtu.be/jTzJ9zjC8nU</a></li> <li>● <a href="https://youtu.be/AASR9rOzhHA">https://youtu.be/AASR9rOzhHA</a></li> <li>● <a href="https://youtu.be/dXZ3qoY_cTw">https://youtu.be/dXZ3qoY_cTw</a>,</li> <li>● <a href="https://youtu.be/xdqFGlSeR-Y">https://youtu.be/xdqFGlSeR-Y</a>,</li> </ul>
<p>Unit V Basics of Data Visualization Introduction to data visualization, challenges of data visualization, Definition of Dashboard, Their type, Evolution of dashboard, dashboard design and principles, display media for dashboard. Types of Data visualization: Basic charts scatter plots, Histogram, advanced visualization Techniques like streamline and statistical measures, Plots, Graphs, Networks, Hierarchies, Reports.</p>	<ul style="list-style-type: none"> <li>● <a href="https://towardsdatascience.com/data-visualization-in-data-science-5681cbdde5bf">https://towardsdatascience.com/data-visualization-in-data-science-5681cbdde5bf</a></li> <li>● <a href="https://livebook.manning.com/book/introducing-data-science/chapter-9/">https://livebook.manning.com/book/introducing-data-science/chapter-9/</a></li> <li>● <a href="https://youtu.be/eFByJkA3ti4">https://youtu.be/eFByJkA3ti4</a></li> <li>● <a href="https://youtu.be/JhK2qVi5dC4">https://youtu.be/JhK2qVi5dC4</a></li> <li>● <a href="https://www.tableau.com/learn/articles/data-visualization">https://www.tableau.com/learn/articles/data-visualization</a></li> <li>● <a href="https://youtu.be/Ynxb-F9euFw">https://youtu.be/Ynxb-F9euFw</a></li> <li>● <a href="https://medium.com/analytics-vidhya/challenges-in-data-visualization-ed3c2c0eb6c9">https://medium.com/analytics-vidhya/challenges-in-data-visualization-ed3c2c0eb6c9</a></li> <li>● <a href="https://www.datasciencecentral.com/profiles/blogs/4-potential-problems-with-data-visualization">https://www.datasciencecentral.com/profiles/blogs/4-potential-problems-with-data-visualization</a></li> <li>● <a href="https://medium.com/nightingale/the-7-biggest-issues-data-visualization-faces-today-7bf6b6457b72">https://medium.com/nightingale/the-7-biggest-issues-data-visualization-faces-today-7bf6b6457b72</a></li> <li>● <a href="https://www.datapine.com/blog/strategic-operational-analytical-tactical-dashboards/">https://www.datapine.com/blog/strategic-operational-analytical-tactical-dashboards/</a></li> <li>● <a href="https://www.toptal.com/designers/data-visualization/dashboard-design-best-practices">https://www.toptal.com/designers/data-visualization/dashboard-design-best-practices</a></li> <li>● <a href="https://www.klipfolio.com/blog/what-is-a-data-dashboard">https://www.klipfolio.com/blog/what-is-a-data-dashboard</a></li> <li>● <a href="https://www.netsolutions.com/insights/good-dashboard-design-principles/">https://www.netsolutions.com/insights/good-dashboard-design-principles/</a></li> <li>● <a href="https://towardsdatascience.com/top-16-types-of-chart-in-data-visualization-196a76b54b62">https://towardsdatascience.com/top-16-types-of-chart-in-data-visualization-196a76b54b62</a></li> <li>● <a href="https://365datascience.com/trending/chart-types-and-how-to-select-the-right-one/">https://365datascience.com/trending/chart-types-and-how-to-select-the-right-one/</a></li> <li>● <a href="https://www.klipfolio.com/resources/articles/what-is-data-visualization">https://www.klipfolio.com/resources/articles/what-is-data-visualization</a></li> <li>● <a href="https://www.xenonstack.com/blog/data-visualization-techniques-processes-and-solutions">https://www.xenonstack.com/blog/data-visualization-techniques-processes-and-solutions</a></li> <li>● <a href="https://www.kdnuggets.com/2016/10/glucore-5-steps-data-analysis-visualization.html">https://www.kdnuggets.com/2016/10/glucore-5-steps-data-analysis-visualization.html</a></li> <li>● <a href="https://youtu.be/eFByJkA3ti4">https://youtu.be/eFByJkA3ti4</a></li> <li>● <a href="https://youtu.be/UjYzNhBVlvY">https://youtu.be/UjYzNhBVlvY</a></li> </ul>
<p>Unit VI Data visualization of multidimensional data Need of data modeling, Multidimensional data models, Mapping of high dimensional data into suitable visualization method-</p>	<ul style="list-style-type: none"> <li>● <a href="https://youtu.be/N9uaQf6CSL8">https://youtu.be/N9uaQf6CSL8</a></li> <li>● <a href="https://youtu.be/q4pyaVZjqk0">https://youtu.be/q4pyaVZjqk0</a></li> <li>● <a href="https://core.ac.uk/download/pdf/301350288.pdf">https://core.ac.uk/download/pdf/301350288.pdf</a></li> <li>● <a href="https://towardsdatascience.com/the-art-of-effective-visualization-of-multi-dimensional-data-6c7202990c57">https://towardsdatascience.com/the-art-of-effective-visualization-of-multi-dimensional-data-6c7202990c57</a></li> </ul>

Principal component analysis,  
clustering study of High dimensional data.

- <https://medium.com/swlh/effective-visualization-of-multi-dimensional-data-a-hands-on-approach-b48f36a56ee8>
  - <https://www.sciencedirect.com/science/article/pii/S1532046404000723>
  - <https://www.serendipidata.com/posts/visualizing-high-dimensional-data>
  - <http://conf.uni-obuda.hu/mtn2005/Kromesch.pdf>
  - <https://jcheminf.biomedcentral.com/articles/10.1186/s13321-020-0416-x>
  - <https://compgenomr.github.io/book/dimensionality-reduction-techniques-visualizing-complex-data-sets-in-2d.html>
- PCA
- <https://youtu.be/pBAbMbgaBAk> clustering
  - <https://youtu.be/BBT3FbG6beg>
  - <https://youtu.be/9J4uXnSDias>