

Basics of Data Analytics

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Basic Realm of Data Analytics

- Overview of the compete space
- **Types -**
 - Exploratory,
 - Descriptive,
 - Predictive,
 - Prescriptive Analytics
- **Profiles -**
 - Data Engg.,
 - Data Scientists,
 - Researchers
- **Types of data -**
 - Structured,
 - Unstructured
 - Big/Small
- **What is Big Data**
- **Theoretical Concepts -**
 - Statistics
 - Probability
 - Optimization
 - Learning Algorithms
- **Tools to analyze data-**
 - BI tools (Tableau, Alteryx, Other)
- **ETL pipeline -**
 - Extract Transform and Load
- **Technologies in data analytics -**
 - Languages
 - Libraries
 - Packeges
- **Technologies in Big data**

Statistical Thinking

- Examples of Statistical Thinking
- Numerical Data, Summary Statistics
- From Population to Sampled Data
- Different Types of Biases
- Introduction to Probability
- Introduction to Statistical Inference
- Conditional Probability and Bayes Rule
- Simpsons Paradox, Confounding

Regression:

- Introduction to Linear Regression
- Special Regression Models
- Forecasting
- Bayesian Inference
 - Combining models and data in a forecasting problem

Prediction -

- Classification/ regression
- Basics of predictive modeling

Discussion on Optimization