

Tech Talk - Machine Learning 101 - What it is and how it can be used?

Tech Talks @ Digital Summit '18



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Agenda

- Introducing **Miracle's Innovation Labs**
- What is **Machine Learning?**
- **CRISP - DM** Methodology
- **Data** Auditing
- **Model Building** and **Evaluation**
- **Predictive** Analytics
- **Image** Recognition
- Applications of **ML** in **Real life**

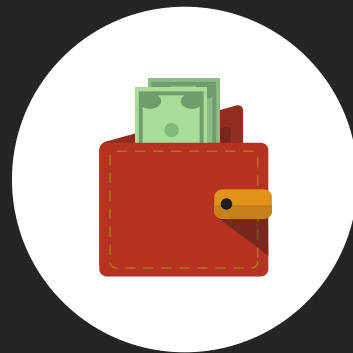
Data is everywhere!

80%

of today's data is **unstructured** – the possibilities of working with this data are endless



Social Media and
News Sources



Transactional
Systems



Connected Things
and Sensors



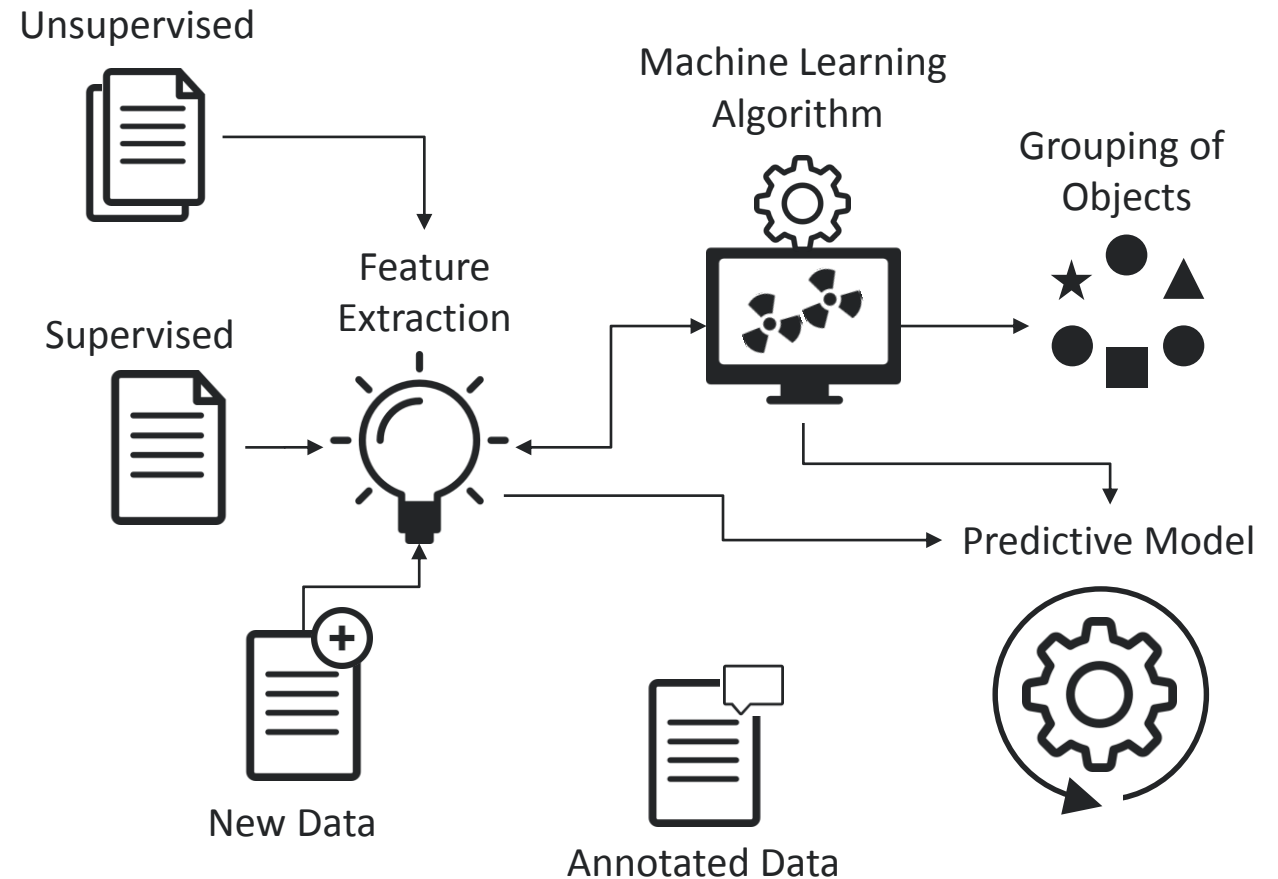
Conversations
with Users

What is Machine Learning?

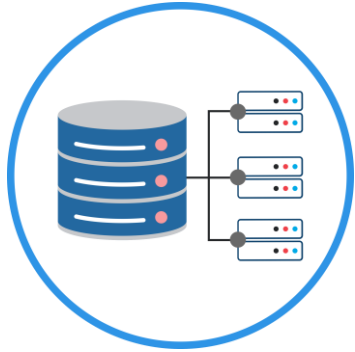
Machine Learning provides systems the ability to automatically learn and improve from experience without being explicitly programmed.

Types of ML Algorithms

- Supervised Learning
 - Data has Known Labels or output
- Unsupervised Learning
 - Labels or output are unknown
- Reinforcement Learning
 - Focus on decision making based on previous experience



Machine Learning



Data Sources



Analyze Data



Extracting the Information



Pattern Analysis

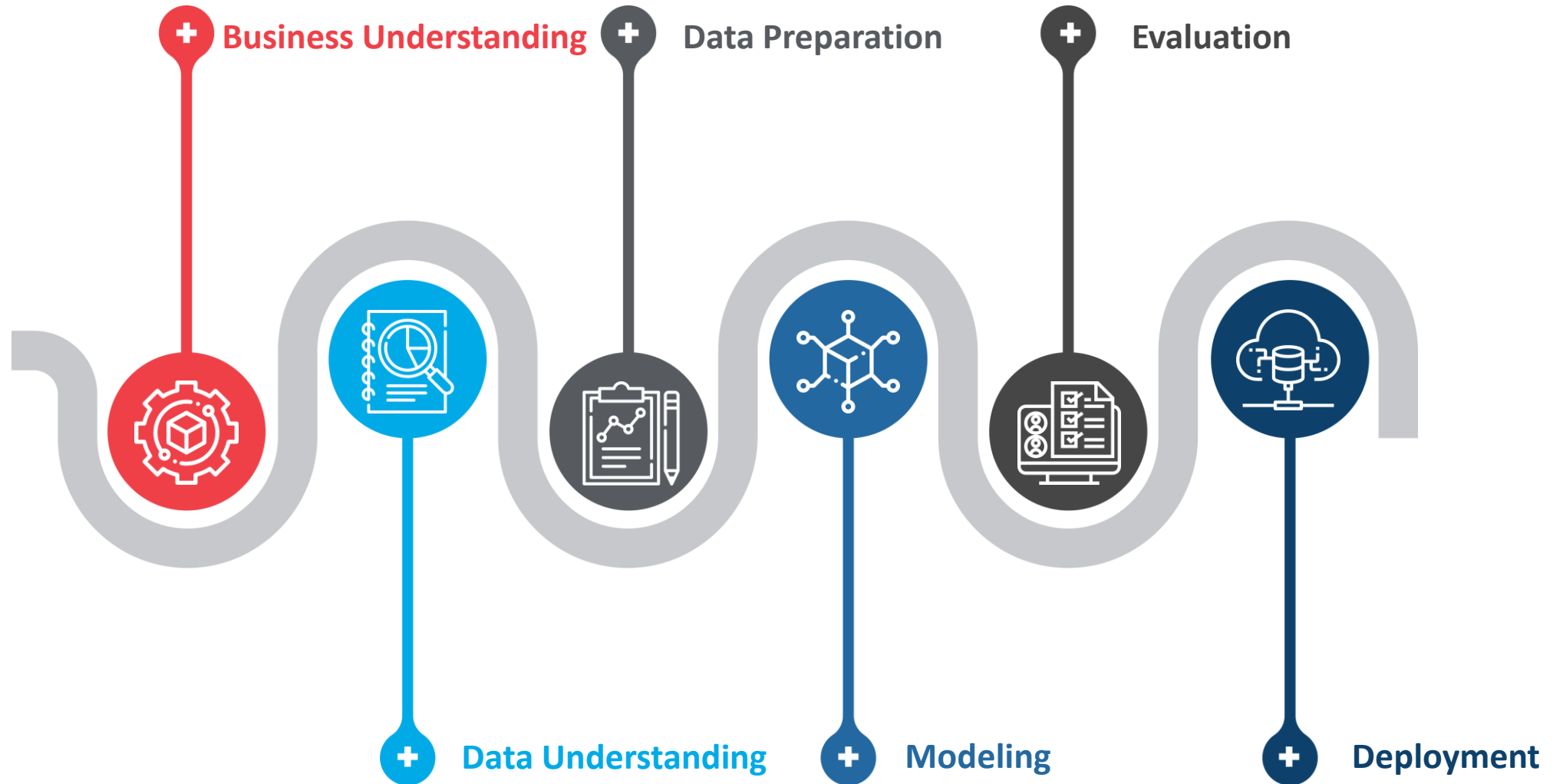


Predict the Future



Betterment

CRISP-DM Methodology



Data Auditing

- It is a crucial step before performing **Data Analysis**
- Helps in understanding the **Data Variables**
- To handle missing values and outliers
- Data Manipulation techniques like join, merge, select, filter, etc. are used
- Summary **statistics** such as minimum and maximum values, mean, standard deviation, variance, etc. are derived



Inspecting the Data



Fitting the Values



Summary Statics



Model Building and Evaluation

- Model is nothing but an algorithm, which is trained using a dataset
- Models will recognize the hidden patterns in the dataset
- Evaluation is an important step before deploying a model
- Every model will have its own characteristics and metrics to evaluate a model
- This evaluation helps in interpreting the results better by comparing the parameters with actual and predicted values



Machine Learning Algorithms

- Simple Linear Regression
- Multiple Linear Regression
- Polynomial Regression
- Logistic Regression
- Support Vector Regression
- Decision Tree
- Random Forest
- K- Nearest Neighbors
- Naïve Bayes
- K-means Clustering

Predictive Analytics

Predictive analytics makes use of data, statistical algorithms and machine learning techniques to identify the likelihood of future outcomes based on historical data

Real time examples - Recommendations, Facial recognition

We can build predictive models on different tools and programming languages like R, Python, SPSS, SAS, Tensor Flow

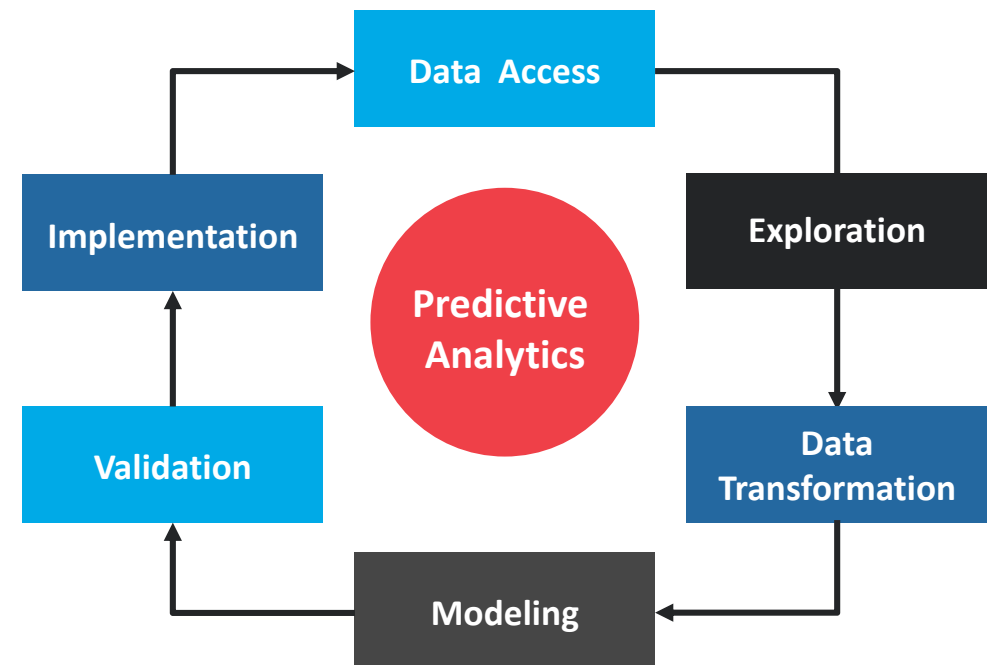
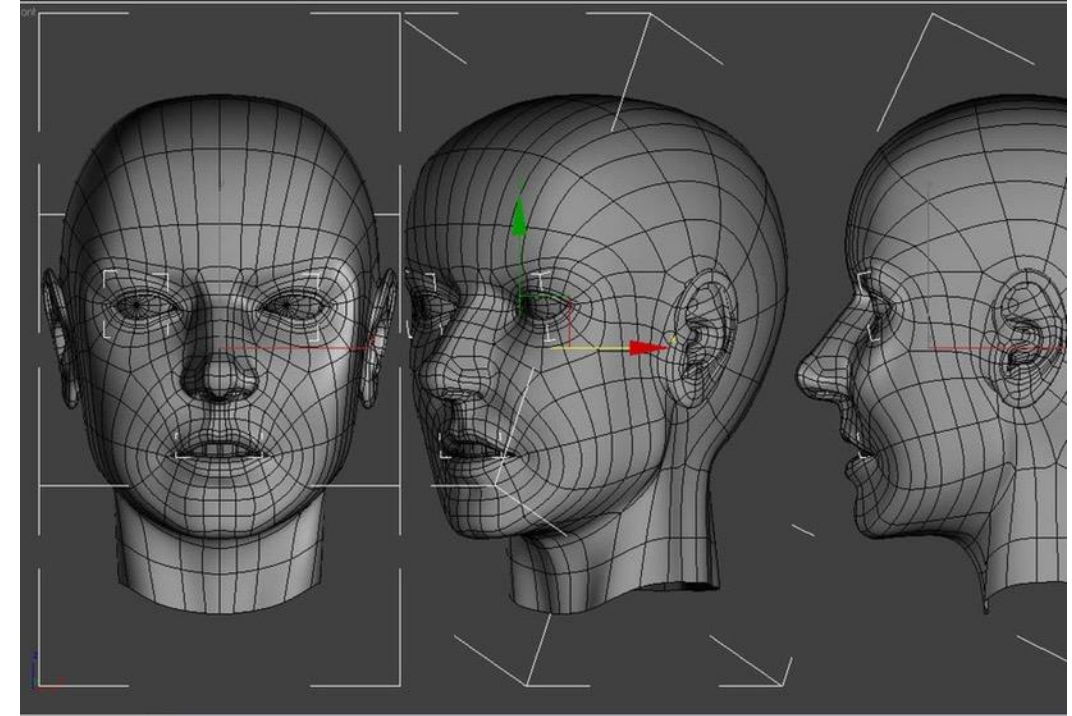


Image Recognition

Image recognition is a technology that strives to acquire, process, analyze, and understand images from the real world in order to produce numerical or symbolic information

When a picture is uploaded on to Facebook, everyone's faces will be recognized and get automatically tagged: that's image recognition



Applications of **ML** in Real life



Insurance



Transportation



Health



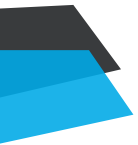
Banking



Public sector



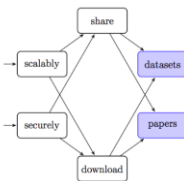
Education



Pool of Datasets



FiveThirtyEight



Academic
Torrents



data.world

kaggle



DATA.GOV



Thank You

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innovating with IT and redefining
solutions for customer excellence.

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