Inspire…Educate…Transform.

Architecting a Solution

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ML or AI

Do you need an expert to solve this problem?
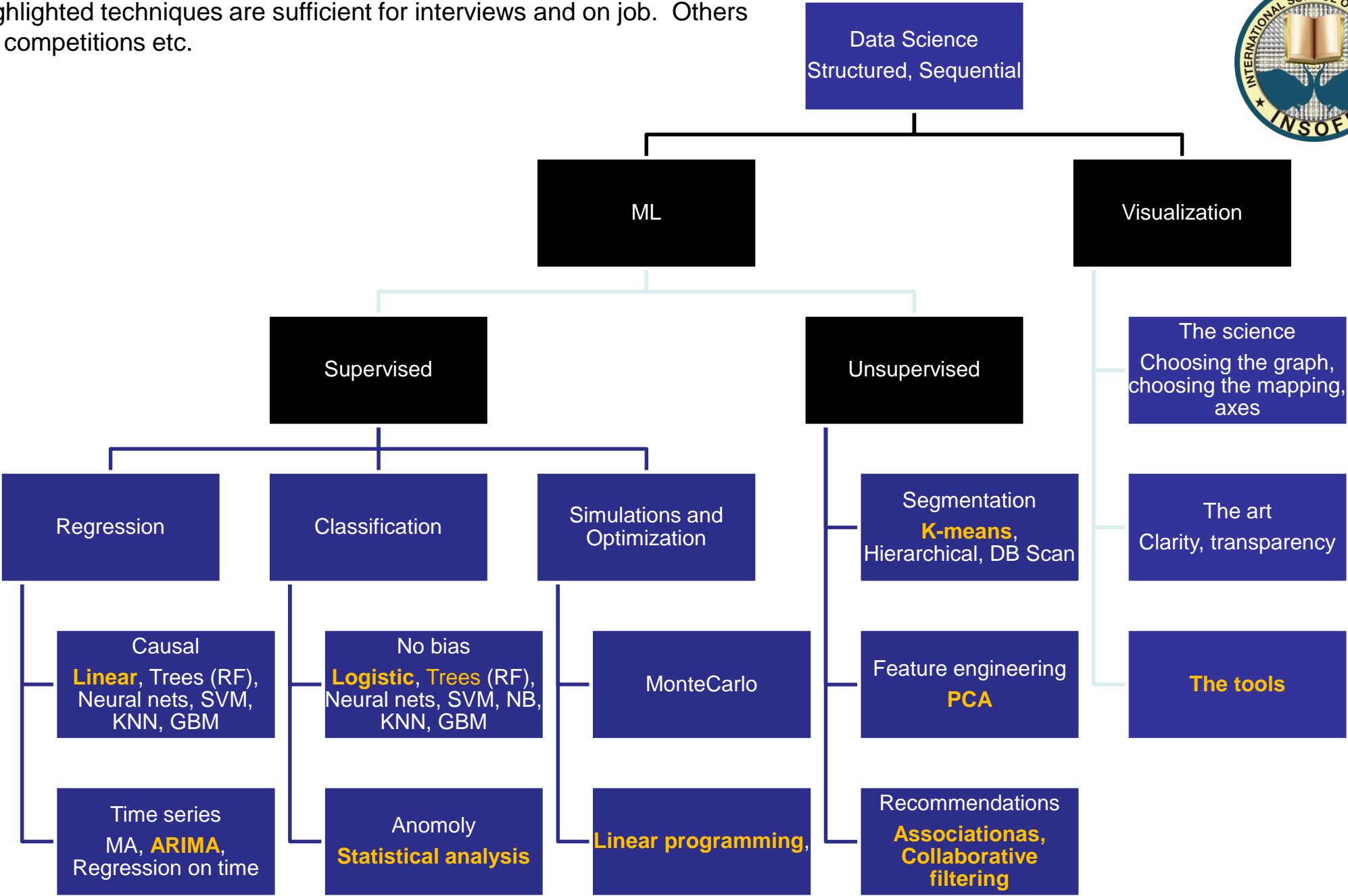
ML is the way to go

Do you need lots of normal people to solve this problem?

AI is the way to go

ML

Highlighted techniques are sufficient for interviews and on job. Others for competitions etc.

Data Science
Structured, Sequential

ML

Visualization

Supervised

Unsupervised

The science
Choosing the graph, choosing the mapping, axes

Regression

Classification

Simulations and Optimization

Segmentation
K-means,
Hierarchical, DB Scan

The art
Clarity, transparency

Causal
Linear, Trees (RF),
Neural nets, SVM,
KNN, GBM

No bias
Logistic, Trees (RF),
Neural nets, SVM, NB,
KNN, GBM

MonteCarlo

Feature engineering
PCA

The tools

Time series
MA, **ARIMA**,
Regression on time

Anomoly
Statistical analysis

Linear programming,

Recommendations
**Associationas,
Collaborative
filtering**

The process

Understand

Business

Problem

Current solution

What is the ROI

→

Analyze

Which bucket(s) the problem falls

What error metrics makes sense

What stories must be told (evolves)

→

Data

Define target (for supervised)

Derive relevant attributes through brainstorming hierarchically

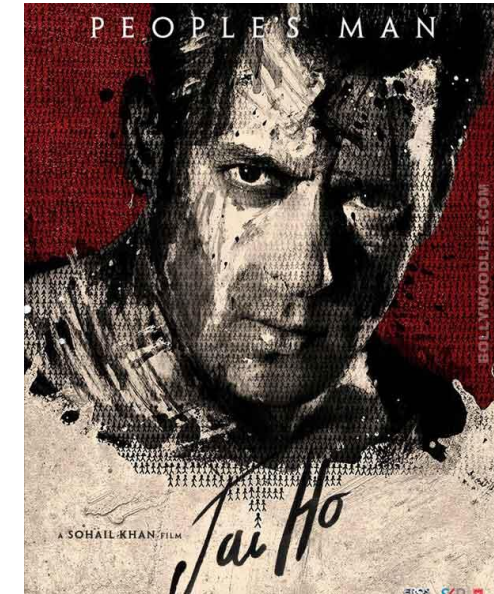**Get what is available, pre-process and visualize**

Engineering

Anybody can build a model. You should build the most efficient and accurate

Engineer features
(transform data, PCA it.
Create smaller number of
classes for categorical).
Did you derive at least 3
additional attributes? Can
you do better?

Keep experimenting with
various hyper parameters;
Regularize

Try at least 3 models on 3
types of data sets with 3 sets
of hyper parameters (27)
before you pick the final
choice.

Validation

Design validation strategy.

Divide the data into train, test and CV.

Plot the error metric for all data for all models and pick the best
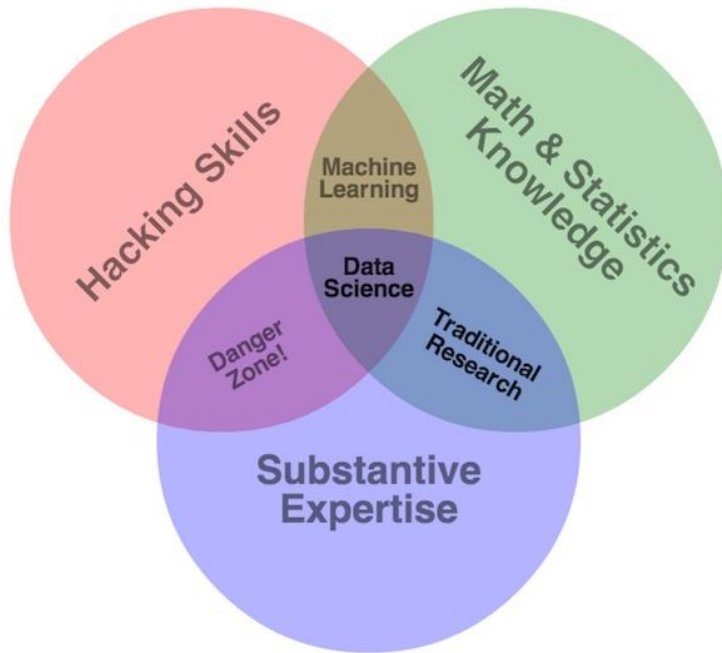
Gaining acceptance

Once upon a time... <sob>

Tell stories from the beginning. Every slide you write must entertain, challenge. Work closely with the client. This tells you what they really are excited with.

Explicability or Accuracy?

Do they want highest possible accuracy?
Go for RF, SVM etc.

Do they want to understand and get high level Patterns? Try LR, DT
In doubt? Do both

Skills at a glance

Data related
Excel, SQL, Hadoop (Hive/Pig/Spark)
Handle text

Math related
Stat analysis, LR (Linear and Logistic), clustering
Linear programming,

Business related
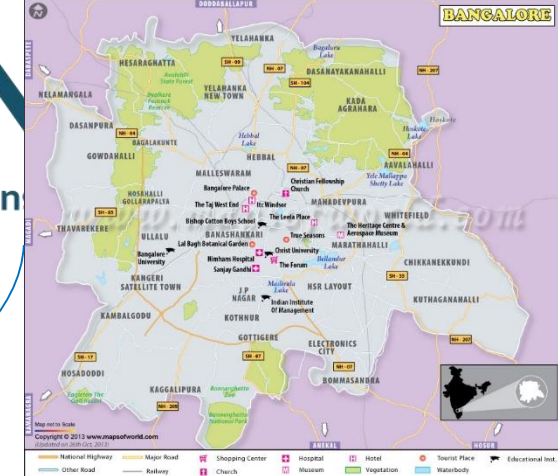Visualize
Tell stories

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