Starting a career in data science

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Why data science?

The intelligente use of data:

- has become a source of competitive advantage
  - Better knowledge about the market
  - Better knowledge about your customers

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The data science process

$$\text{Data} \rightarrow \text{Information} \rightarrow \text{Decision}$$

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The goal

Data-Driven Decision Making

What is a data scientist?

Key skills

- Fitting in an **organization**, leading projects in a heterogeneous environment, aligning with strategy
- Data-Analytic **Thinking**
- How to extract **knowledge** from data

The three facets of a data scientist

- Functional (domain knowledge)
- Analytical (how to extract knowledge from data)
- Technical (how to implement the data science process)

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The three facets of a data scientist

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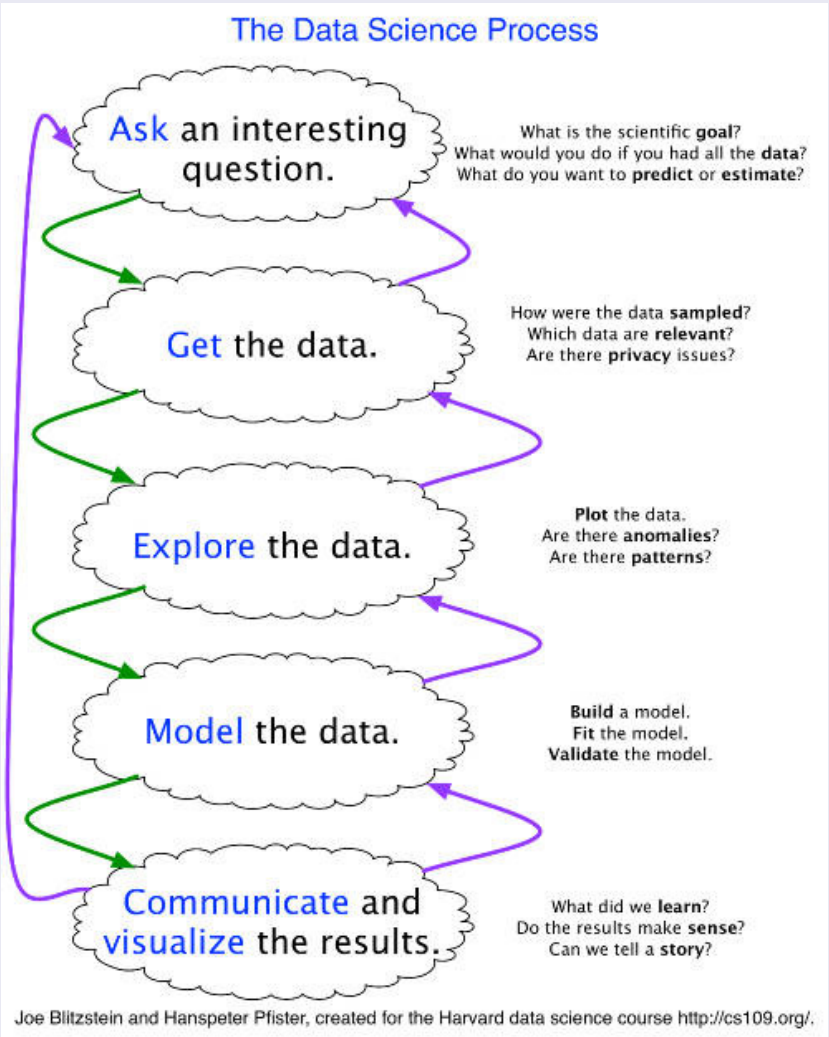
Question

- Are the three facets equally important?
- Which facet is the most important?

The Data Science process

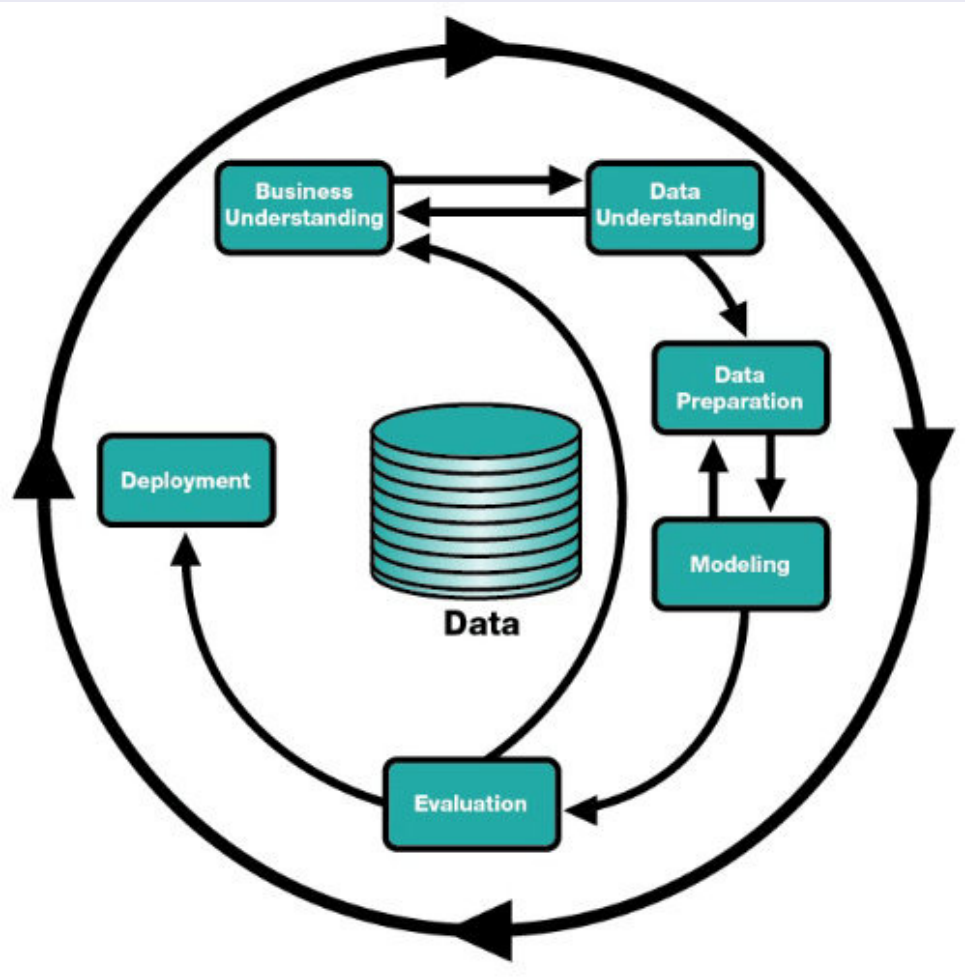


1. Ask a question
   - *Domain expertise*
2. Get and prepare the data
   - *Python*, *Pandas*, *R*
3. Explore the data
   - *Pandas*, *Matplotlib*, *R*, *Spark*, *Tableau*
4. Model the data
   - *Python Scikit-Learn*, *R*, *Spark*
5. Communicate the results
   - *Tableau*, *Looker*

http://www.kdnuggets.com/2016/03/data-science-process-rediscovered.html

But it is always iterative...

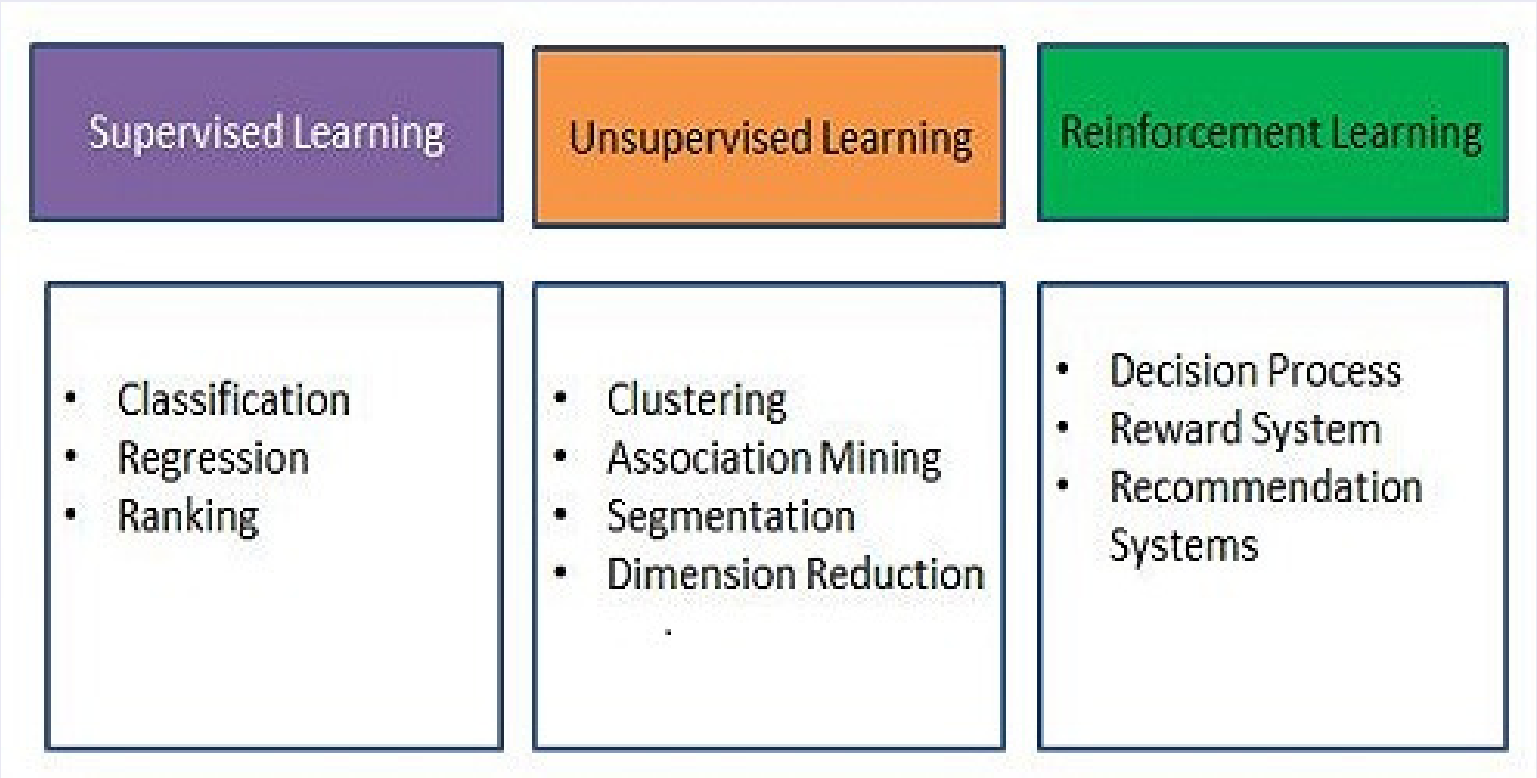
Very rarely (never?) you will do it in just one pass



https://en.wikipedia.org/wiki/Cross_Industry_Standard_Process_for_Data_Mining

What kind of questions can we answer to?

Machine Learning & Statistics Applications



http://www.kdnuggets.com/2015/09/questions-data-science-can-answer.html

What kind of questions can we answer to?

Classifications of questions

- Is this A or B?
  - Binary classification
- Is this A, B, C or D?
  - Multi-class classification
- Is this normal or weird?
  - Anomalies detection
- How much or how many?
  - Regression
- How is this data organized?
  - Unsupervised learning
  - Dimensionality reduction
- What should I do now?
  - Recommendation systems

Share promiscuously

You need visibility

- Use the social networks to position yourself as a data scientist
  - **Crucial:** Profile in **LinkedIn** and share, share, share!
  - Share frequently about your progress in the master
- Share your code in **Github** or Bitbucket
  - Try to use it frequently, so it always shows recent activity
  - Don't worry if you don't know Git, we will see in the first session
- Don't mix (too much) your personal postings with your data scientist postings
  - For instance, use Facebook for your personal network, and Twitter for your professional postings

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- Extracting useful knowledge from data to solve business problems can be treated systematically by following a process with reasonably well-defined stages.
- From a large mass of data, information technology can be used to find informative descriptive attributes of entities of interest.
- If you look too hard at a set of data, you will find something – but it might not generalize beyond the data you are looking at.

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Key ideas to remember

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- Formulating data science solutions and evaluating the results involve thinking carefully about the context in which they will be used.

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- If you look too hard at a set of data, you will find something – but it might not generalize beyond the data you are looking at.
- Formulating data science solutions and evaluating the results involve thinking carefully about the context in which they will be used.
- It's not about the technologies. Technology will always change very fast. Learn the concepts, apply them with technology. Be open to learning new technologies (and sometimes it will also imply learning new concepts). The only constant is change.