Practical and Modern A/B Test Methods for Data Scientists

24 hours

Course Overview:

A/B Test methodology is widely used in commercial Web Pages, Applications, UI Design and scientific experiments. Optimizing the process and answering business-oriented questions can improve the performance of many goal oriented tasks.

This course is about learning the concept of A/B Test.

The course will use Jupyter Notebooks with Python / Julia code within the class in real time.

Through instructor-led discussion and interactive, hands-on exercises, participants will understand concept of A/B Test and learn topics such as:

- To introduce the 2 main approaches for A/B Test.
- The multi variants test (A/B/C).
- The Explore vs. Exploit dilemma and few policies to handle it.
- Real world tricks for efficient and reliable tests.

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Who should attend:

- Data scientists.
- Software engineers.
- Algorithms engineers.

Required skills:

- Basic Python / Julia.
- Basic Probability / Statistics.

Course Contents:

- A/B Test
  - Definition
  - Key Performance Indicators: Discrete (Sales / Clicks) vs. Continuous (Revenue, Revenue per View / Click)
- Frequentist A/B Approach
  - The Model
  - The T-Test (Continuous and Discrete)
  - Estimating number of samples
- Bayesian A/B Approach
  - Bayesian vs. Frequentist
  - Priors for Bayesian Model and Conjugate Priors
  - Discrete Bayesian Model
  - Continuous Bayesian Model
  - Stopping Rules, Confidence Intervals
- Real World Practices
  - Learning prior
  - Control group
  - Answering business questions by simulations.
  - Online Test

  - Visualizations

- Introduction to Probabilistic Programming
  - Concept
  - Frameworks
    - Python: PyMC, Pyro
    - Julia: Turing
  - Modeling: Regression, Robust Regression, Best Tennis Player
- Multi Armed Bandits as Online Multivariate A/B Test
  - Definition of the Problem
  - Intuition and Basic Policies
  - Thomas Sampling
  - Reinforcement Learning approach to Multi Armed Bandits