



Ivy Road School

Tel: (213)-200-2300 Address: 3251 W. 6th St., Suite #110 Los Angeles, CA 90020



HARVARD
UNIVERSITY

CS50's Introduction to Artificial Intelligence with Python

Courses in this program

1. Statistics and R

- Random variables
- Distributions
- Inference: p-values and confidence intervals
- Exploratory Data Analysis
- Non-parametric statistics

2. Introduction to Linear Models and Matrix Algebra

- Matrix algebra notation
- Matrix algebra operations
- Application of matrix algebra to data analysis
- Linear models
- Brief introduction to the QR decomposition

3. Statistical Inference and Modeling for High-throughput Experiments

- Organizing high throughput data
- Multiple comparison problem
- Family Wide Error Rates



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- False Discovery Rate
- Error Rate Control procedures
- Bonferroni Correction
- q-values
- Statistical Modeling
- Hierarchical Models and the basics of Bayesian Statistics
- Exploratory Data Analysis for High throughput data

4. High-Dimensional Data Analysis

- Mathematical Distance
- Dimension Reduction
- Singular Value Decomposition and Principal Component Analysis
- Multiple Dimensional Scaling Plots
- Factor Analysis
- Dealing with Batch Effects
- Clustering
- Heatmaps
- Basic Machine Learning Concepts