Pierian Data Inc. Presents

Data Science Career Interview Prep Guide

By: Jose Marcial Portilla

Table of Contents

Course Overview

Welcome to the course!

This guide contains the resources and links mentioned in the lecture in one convenient location.

If during the course videos you hear us mention resources or links, just open up this guidebook to find them!

You can use the Table of Contents as links to directly jump to whatever location you need to go to.

Best of luck on your data science journey!

If you ever have a need for corporate training, feel free to reach us at training@pieriandata.com.

Data Science Career Overview

DS Career Overview Slides:

https://docs.google.com/presentation/d/1V1GDbnU00fZbejq3U61e3D-TgB0FxkyrlyURpDtAEH8/edit?usp=sharing

Why Choose a Career in Data Science?

Deciding on a Data Science Career:

https://www.kdnuggets.com/2014/03/data-scientist-right-career-path-candid-advice.html

http://www.datacenterjournal.com/consider-career-data-science/

Data Science is Interdisciplinary

Overviews of Data Science:

https://datascience.nyu.edu/what-is-data-science/

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

Data Science Positions and Titles

Large list of various job titles:

https://www.datasciencecentral.com/profiles/blogs/job-titles-for-data-scientists

https://www.datasciencecentral.com/profiles/blogs/400-categorized-job-titles-for-data-scientists

Thoughts on Higher Education

Other opinions on higher education:

https://www.kdnuggets.com/2014/06/masters-degree-become-data-scientist.html

Data Science Interview Preparation

Technical Tools of the Trade

Python:

https://www.python.org/

R:

https://www.r-project.org/about.html

Theory Knowledge

Free Online Stats Books:

http://onlinestatbook.com/

https://www.openintro.org/stat/textbook.php

Machine Learning Knowledge

Great Book on Machine Learning (Free):

http://www-bcf.usc.edu/~gareth/ISL/ISLR%20Seventh%20Printing.pdf

Software Knowledge

Tableau:

https://www.tableau.com/

Data Science Interview Process

Resumes

Example Data Science Resume:

http://will-stanton.com/creating-a-great-data-science-resume/

https://docs.google.com/document/d/1ktqmnyG8olnZ24DqJZ3G9h619ng-JYeiY6gNh-i_Q6o/edit

https://www.monster.com/career-advice/article/data-scientist-resume-sample

Interview Process

AirBnb's Interview Process:

https://medium.com/@AirbnbCandidateJourney/leveling-the-playing-field-an-overview-of-airbnb-s-data-science-interview-process-bd0660b77a17

Nice Guide to Interviews:

https://www.linkedin.com/pulse/how-ace-data-science-interview-vin-vashishta/

Someone's experience with DS Interviews

https://alyaabbott.wordpress.com/2014/10/01/how-to-ace-a-data-science-interview/

Nice write ups on other individual's process:

https://medium.com/@XiaohanZeng/i-interviewed-at-five-top-companies-in-silicon-valley-in-five-days-and-luckily-got-five-job-offers-25178cf74e0f

More thoughts on interviews:

https://www.quora.com/How-do-I-prepare-for-a-data-scientist-interview

Landing Interviews

Experience Essay Blog Post:

http://www.erinshellman.com/crushed-it-landing-a-data-science-job/

General Discussion:

http://treycausey.com/data_science_interviews.html

Nide Guide:

http://data-informed.com/six-secrets-to-landing-a-job-in-data-science/

Negotiating Offers

Guides for Salary Negotiation:

https://www.nerdwallet.com/blog/loans/student-loans/negotiate-salary-evaluate-offer/

https://www.themuse.com/advice/how-to-negotiate-salary-37-tips-you-need-to-know

https://www.thebalance.com/salary-negotiation-tips-how-to-get-a-better-offer-2063439

https://www.washingtonpost.com/graphics/business/womens-wages/salary-negotiation-guide-women/

Probability Theory Resources

Probability Slides:

https://docs.google.com/presentation/d/13M9iCeBU8fngtU4tzjudMCmmP6Fd3BsCUuycCuH3PIE/edit?usp=sharing

Probability Question 1 Help - Consecutive Coin Flip

https://math.stackexchange.com/questions/112726/coin-tossed-until-two-consecutive-heads-or-tails-appear

https://en.wikipedia.org/wiki/Geometric_series#Sum

https://en.wikipedia.org/wiki/Expected_value#Finite_case

Probability Question 2 Help - Dice roll sum of 4 Odds

http://alumnus.caltech.edu/~leif/FRP/probability.html

Probability Question 3 Help - Dice roll with at least one 4

http://alumnus.caltech.edu/~leif/FRP/probability.html

Probability Question 4 Help - Red and Blue Marbles

https://www.techinterview.org/post/526363745/red-marbles-blue-marbles/

Probability Question 5 Help - Odds of Car in 10 Minutes

https://www.quora.com/If-the-probability-of-observing-a-car-in-30-minutes-on-a-highway-is-0-95-what-is-the-probability-of-observing-a-car-in-10-minutes-assuming-constant-default-probability

https://math.stackexchange.com/questions/52113/probability-calculations-on-highway

Probability Question 6 Help - Average Flips for 2 Heads in a Row

https://www.codechef.com/wiki/tutorial-expectation

https://courses.cit.cornell.edu/info2950_2012sp/mh.pdf

Probability Question 7 Help - 1 Biased Coin of 10

https://en.wikipedia.org/wiki/Bayes%27_theorem

Probability Question 8 Help - Simulating Fair Coin from Biased Coin

http://www.eecs.harvard.edu/~michaelm/coinflipext.pdf

https://jeremykun.com/2014/02/08/simulating-a-fair-coin-with-a-biased-coin/

Probability Question 9 Help - Alice, Odds of having another Girl

https://math.stackexchange.com/questions/15055/in-a-family-with-two-children-what-are-the-chances-if-one-of-the-children-is-a

Statistics Resources

Statistic Slides:

https://docs.google.com/presentation/d/1VCLkMu3CRTuSN-nC4EaPVwhXd9a_0p-4S-ci5FJRJKI/edit?usp=sharing

Statistics Question 1 Help - Raining in Seattle

https://www.mathsisfun.com/data/probability-tree-diagrams.html

Statistics Question 2 Help - Quantum Messaging

https://www.intmath.com/counting-probability/12-binomial-probability-distributions.php

Statistics Question 3 Help - Type I vs Type II Errors

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

Statistics Question 4 Help - New Virus Test

https://math.hmc.edu/funfacts/tag/probability/

Statistics Question 5 Help - Motor Life Guarantee

http://www.z-table.com/

https://statistics.laerd.com/statistical-guides/normal-distribution-calculations.php

Product Design and Metrics Resources

Product Design and Metrics Slides:

https://docs.google.com/presentation/d/1pY15hTUjMyzDEI-RenE-hvwJsfZNIJCp4TRVkGsLR0o/edit?usp=sharing

Product Design and Metrics Interview Question 1 - FB Messenger

https://savvyapps.com/blog/mobile-app-analytics

Product Design and Metrics Interview Question 2,3,4 - A|B Google

https://en.wikipedia.org/wiki/A/B_testing

https://www.pardot.com/blog/abcs-ab-testing/

http://online-behavior.com/testing/advanced-ab-testing-tactics-1356

Product Design and Metrics Interview Question 5 - Car Gas Usage

https://www.glassdoor.com/Interview/business-sense-There-are-two-types-of-cars-A-and-B-The-number-of-people-in-US-who-use-A-and-B-are-the-same-They-driv-QTN_831574.htm

Working with Data with SQL Resources

SLIDES:

https://docs.google.com/presentation/d/1YXmZ1Uu9TL5ckxNOk8c7k8a6dd3Lk_DbG30hOPatQVg/edit?usp=sharing

SQL Interview Question 1 - Query Check

https://www.w3schools.com/sql/sql_alias.asp

SQL Interview Question 2 - Query Check

https://www.w3schools.com/sql/sql_groupby.asp

SQL Interview Question 3 - Query Check

https://www.w3schools.com/sql/sql_having.asp

SQL Interview Question 4 - Employees and Managers

https://www.w3schools.com/sql/default.asp

SQL Interview Question 5 - Employees and Managers

https://www.w3schools.com/sql/sql_join.asp

Machine Learning Resources

Machine Learning Slides

https://docs.google.com/presentation/d/1VvSWus6sjXEV7WG7FuH__Pi5rwB0_WlKc7A5Whx5gVg/edit?usp=sharing

Machine Learning Question 1 - Linear Regression Assumptions

http://www.statisticssolutions.com/assumptions-of-linear-regression/

http://r-statistics.co/Assumptions-of-Linear-Regression.html

https://stats.stackexchange.com/questions/16381/what-is-a-complete-list-of-the-usual-assumptions-for-linear-regression

Machine Learning Question 2 - Logistic Regression

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

http://dataaspirant.com/2017/03/02/how-logistic-regression-model-works/

Machine Learning Question 3 - Decision Tree Splits

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

http://dni-institute.in/blogs/cart-decision-tree-gini-index-explained/

https://link.springer.com/article/10.1023/B:AMAI.0000018580.96245.c6

Machine Learning Question 4 - Decision Tree Advantages

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

http://www.brighthubpm.com/project-planning/106000-advantages-of-decision-tree-analysis/

http://www.simafore.com/blog/bid/62333/4-key-advantages-of-using-decision-trees-for-predictive-analytics

Machine Learning Question 5 - Random Forest vs Boosting

http://fastml.com/what-is-better-gradient-boosted-trees-or-random-forest/

https://www.quora.com/When-would-one-use-Random-Forests-over-Gradient-Boosted-Machines-GBMs

https://discuss.analyticsvidhya.com/t/what-is-the-fundamental-difference-between-randomforest-and-gradient-boosting-algorithms/2341

https://stats.stackexchange.com/questions/173390/gradient-boosting-tree-vs-random-forest

Machine Learning Question 6 - Naive Bayes Assumptions

https://nlp.stanford.edu/IR-book/html/htmledition/properties-of-naive-bayes-1.html

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

Machine Learning Question 7 - How SVM Works

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

Machine Learning Question 8 - Overfitting

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

https://www.quora.com/What-is-an-intuitive-explanation-of-over-fitting-particularly-with-a-small-sample-set-What-are-you-essentially-doing-by-over-fitting-How-does-the-over-promise-of-a-high-R%C2%B2-low-standard-error-occur

Machine Learning Question 9 - Accuracy, Precision, Recall

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

Machine Learning Question 10 - Regression Metrics

https://people.duke.edu/~rnau/compare.htm

Design of Experiments Resources

Design of Experiments Slides:

https://docs.google.com/presentation/d/1mmfJyhApROEfTZrNAIFlGJfS0lRDsJXD3Fr2WhhgxEI/edit?usp=sharing

Design of Experiments Question 1 - A|B Testing

https://www.optimizely.com/optimization-glossary/ab-testing/

https://en.wikipedia.org/wiki/A/B_testing

Design of Experiments Question 2 - Biases

https://en.wikipedia.org/wiki/Bias_(statistics)

http://www.statisticshowto.com/what-is-bias/#Availability

Design of Experiments Question 3 - Multiple Versions of Page Testing

https://en.wikipedia.org/wiki/Multi-armed_bandit

https://www.searchenginepeople.com/blog/16072-multi-armed-bandits-ab-testing-makes-money.html

Design of Experiments Question 4

http://rpsychologist.com/d3/NHST/

https://onlinecourses.science.psu.edu/stat414/book/export/html/245

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

Coding Resources

Coding Slides

https://docs.google.com/presentation/d/15SCi6Fpjq0edRYhM5w7GDZBm3kdeUsWq8kSEHVziYZg/edit?usp=sharing

Coding Interview Question 1 - Largest Continuous Sum

Solution Link in Python:

https://gist.github.com/Pierian-Data/51202d7a84e36537df97a7c9ca78061f

Coding Interview Question 2 - String Compression

Solution Link in Python:

https://gist.github.com/Pierian-Data/4c85a5adc36a282223065d52cc178595

Coding Interview Question 3 - Stock Prices

Solution Link in Python:

https://gist.github.com/Pierian-Data/a17fd7357aeb919306864fe435e6ed15

Coding Interview Question 4 - Missing Element

Solution Link in Python:

https://gist.github.com/Pierian-Data/eaa589bb6ad88a5ec00b42d8d0f29328