Network ID: GA-Guest

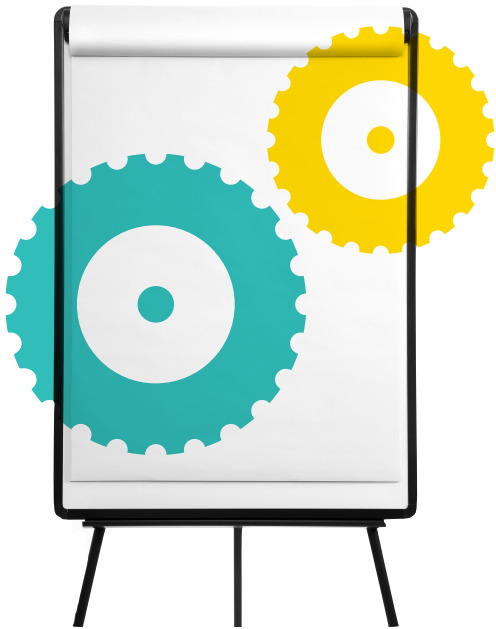
Password: yellowpencil

WELCOME TO OPENING DAY OF

DATA SCIENCE

ORIENTATION AGENDA

1. Meet Your Course Producer
2. Meet The Instructional Team
3. General Course Info
4. GA Mission
5. Course Expectations
6. Student Experience
7. Meet Your Classmates



OPENING DAY

HELLO

WHAT IS A PROGRAM PRODUCER?

FOCUS: STUDENT SUCCESS + INSTRUCTOR SUPPORT

timothy.payne@ga.co

OPENING DAY

MEET YOUR INSTRUCTIONAL TEAM

INSTRUCTOR & TA

IVAN CORNEILLET
GEORGE MCINTIRE

COURSE INFO

DS25

July 13th - September 21st (No class on September 5th)

Mondays and Wednesday 6:30-9:30

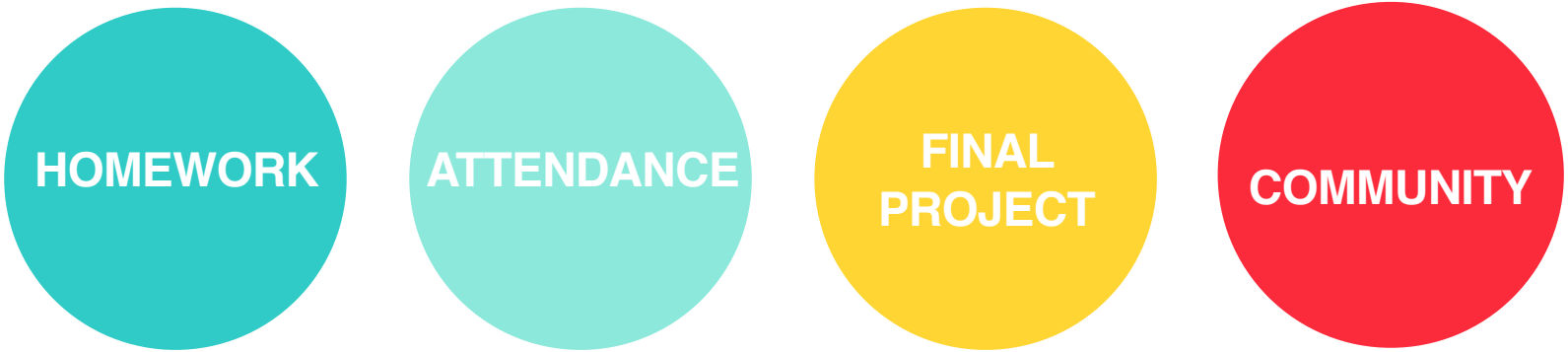
Classroom 3

GENERAL ASSEMBLY IS A GLOBAL COMMUNITY OF INDIVIDUALS EMPOWERED TO PURSUE THE WORK WE LOVE.

GENERAL ASSEMBLY'S MISSION IS TO BUILD OUR COMMUNITY BY TRANSFORMING MILLIONS OF THINKERS INTO CREATORS.

COURSE EXPECTATIONS

SUCCESSFUL GRADUATE PROFILE



COMPLETE 80% OF HOMEWORK/LABS

BE PRESENT FOR AT LEAST 18 CLASSES

ROCK IT!

GET INVOLVED!

COURSE EXPECTATIONS

1. Arrive on time.
2. Turn in your assignments.
3. Ask questions.
4. Share with peers.
5. Complete exit tickets.
6. Complete mid & end of course surveys.
7. Make friends.

STUDENT SPACE

STUDENT EXPERIENCE

DATA SCIENCE ORIENTATION

GA

DISCOUNTS!

15% off all classes and workshops

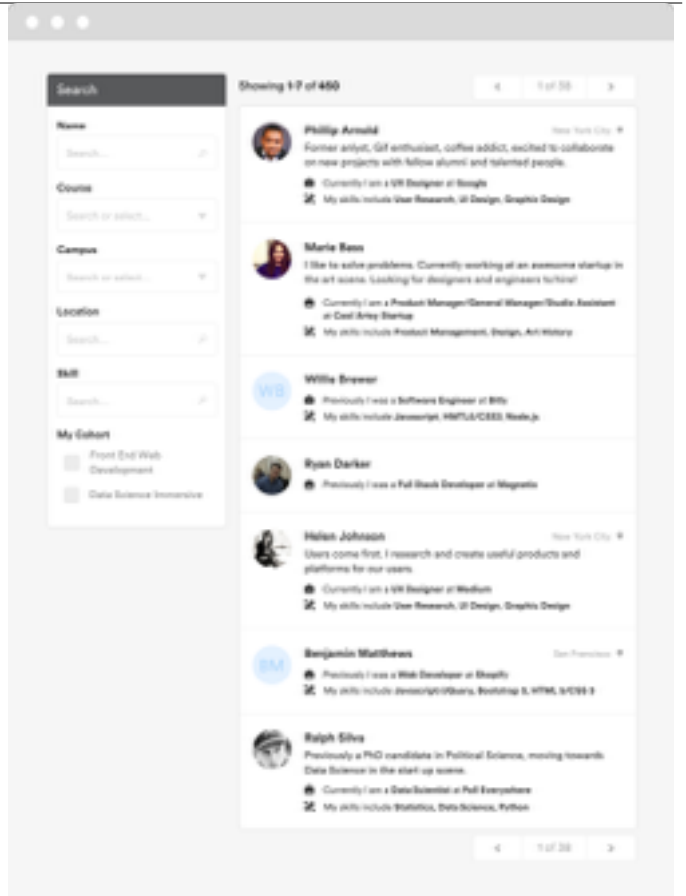
code: currentstudentdiscount15

GA Directory

The GA Directory is a place for students, alumni and instructors to connect.

- Find your classmates
- Reach out to alumni and instructors
- Hire talent based on skills and experience

directory.generalassemb.ly



MEET YOUR CLASSMATES

WE'RE ALL IN THIS TOGETHER.

QUESTIONS?

Welcome to Data Science

Ivan Corneillet

Data Scientist

GENERAL ASSEMBLY

Learning Objectives

After this lesson, you should be able to:

- Describe the roles and components of a successful learning environment
- Define data science and data scientists
- Setup your development environment and practice the different workflows used in the course

Today

Here's what's happening today:

- Welcome to GA and DS!
- Pre-work
- Setting you up for success
- What is data science and who are data scientists?
- Installfest
- Lab – Python Review
- Review
- Exit Tickets

Welcome to GA and DS!

Pre-Work

Pre-Work

Before this lesson, you should already be able to:

- Define basic data types used in object-oriented programming
- Recall the Python syntax for lists, dictionaries, and functions
- Create files and navigate directories using the command line interface

Setting You Up for Success

Meet Your Team

- Ivan Corneillet, Lead Instructor

- George McIntire, Associate Instructor

- Tim Payne, Course Producer

Course Logistics

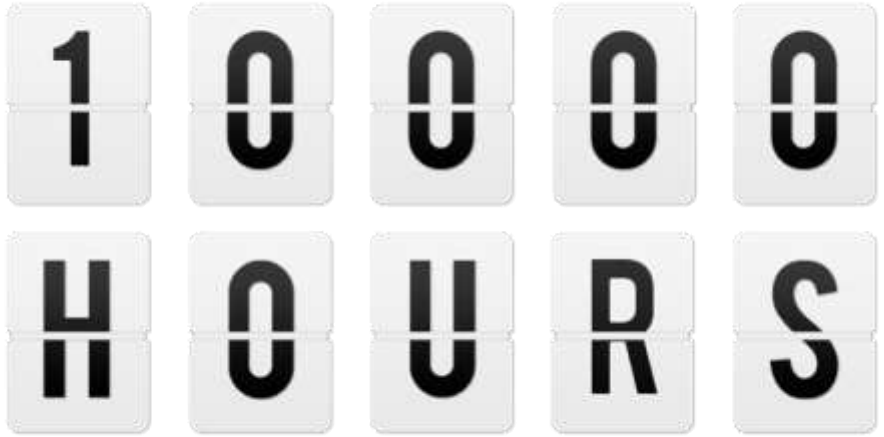
- Lead Instructor
  - Ivan Corneillet (ivan+GA@paspeur.com)
- Associate Instructor
  - George McIntire (geo.mcintire@gmail.com)
- Course Producer
  - Tim Payne (timothy.payne@generalassemb.ly)
- Class
  - July 13 – September 21, Mondays and Wednesdays, 6:30PM – 9:30PM (no class on September 5)
  - Classroom 3
- Slack
  - https://ds-sf-25.slack.com
- GitHub
  - https://github.com/ga-students/DS-SF-25
- Exit Tickets
  - http://tiny.cc/ds-sf-25

What skills will I learn in this class?

Research Design and Data Analysis	Research Design	Data Visualization in *pandas*	Statistics	Exploratory Data Analysis in *pandas*
Foundations of Modeling	Linear Regression	Classification Models	Evaluating Model Fit	Presenting Insights from Data Models
Data Science in the Real World	Decision Trees and Random Forests	Time Series Data	Natural Language Processing	Databases

Gladwell's 10,000 Hour Rule

- "Greatness requires enormous time"
  - It takes roughly ten thousand hours of practice to achieve mastery in a field

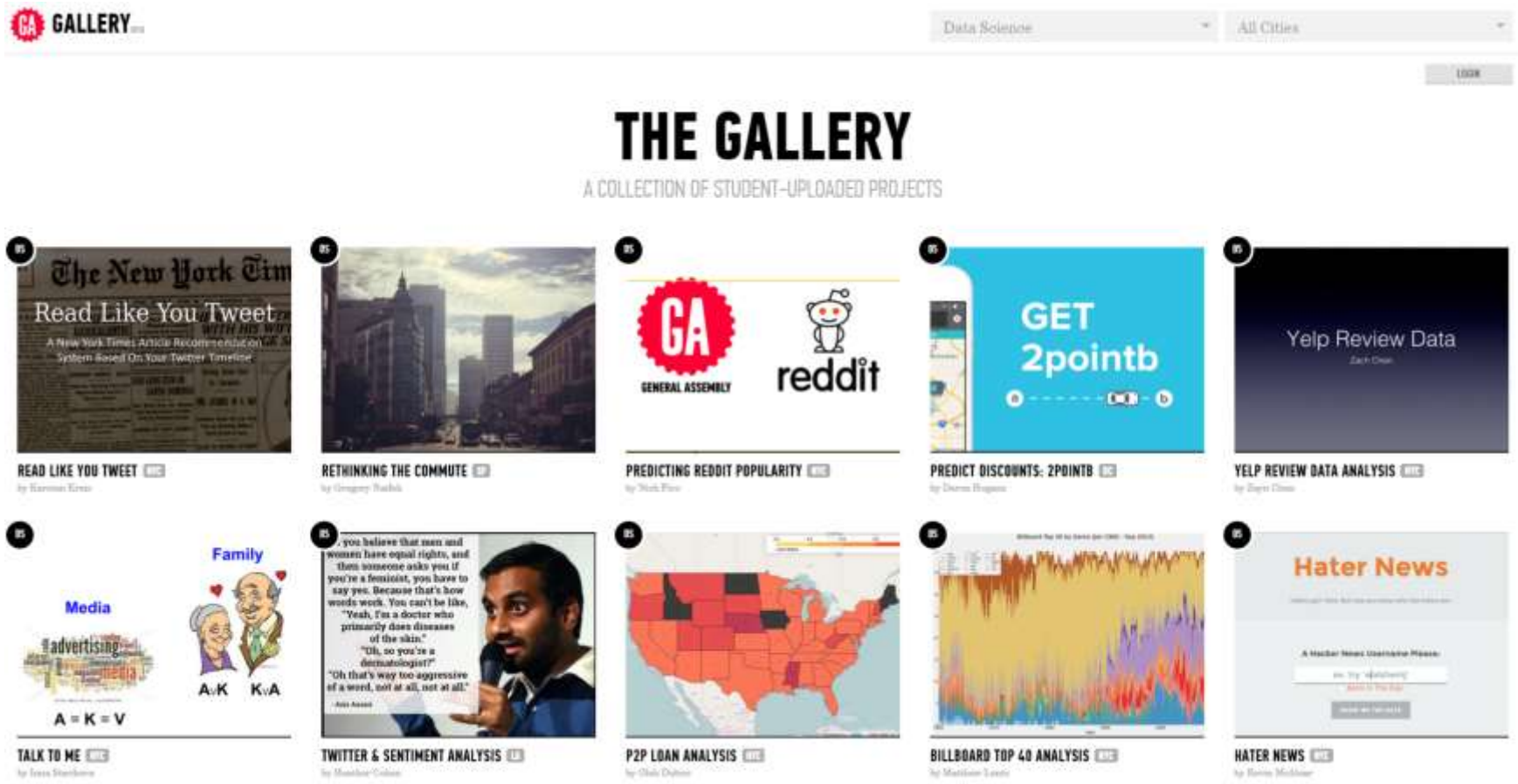


How will I apply and reinforce these new skills?

Unit Project You will design a research project, perform exploratory data analysis and build a logistic model to determine what factors affect admission the most	Research Design	Exploratory Data Analysis	Logistic Modeling	Executive Summary with Findings	
Final Project Using a dataset of your choosing, you will design a project, build a data science model and present their finding to the course	Lightning Presentation	Experimental Write-up	Exploratory Analysis	Notebook Draft	Final Presentation

Past Student Projects

(https://gallery.generalassemb.ly/DS)



Typical Class

- Today's objectives
- Announcements and exit tickets
- Review of the previous class
- Series of:
  - Short lectures
    - (deck, whiteboard, codealongs, and demos)
  - Practices
    - (individual and group exercises, and codealongs)
- Lab/Independent study
- Review of today's class
- Office hours for final projects (for the last 3 weeks of the course)
- Exit Tickets

Q & A

Setting You Up for Success

Slack (https://ds-sf-25.slack.com)

GitHub (https://github.com/ga-students/DS-SF-25)

Exit Tickets (http://tiny.cc/ds-sf-25)

Q & A

What is Data Science and Who are Data Scientists?

Activity | What is Data Science and Who are Data Scientists?

EXERCISE

DIRECTIONS (10 minutes)

1. What is data science? What are its applications? Why now? What's next?
2. Who are data scientists? How do they add value? What makes a good data scientist?
3. When finished, share your answers with your table

DELIVERABLE

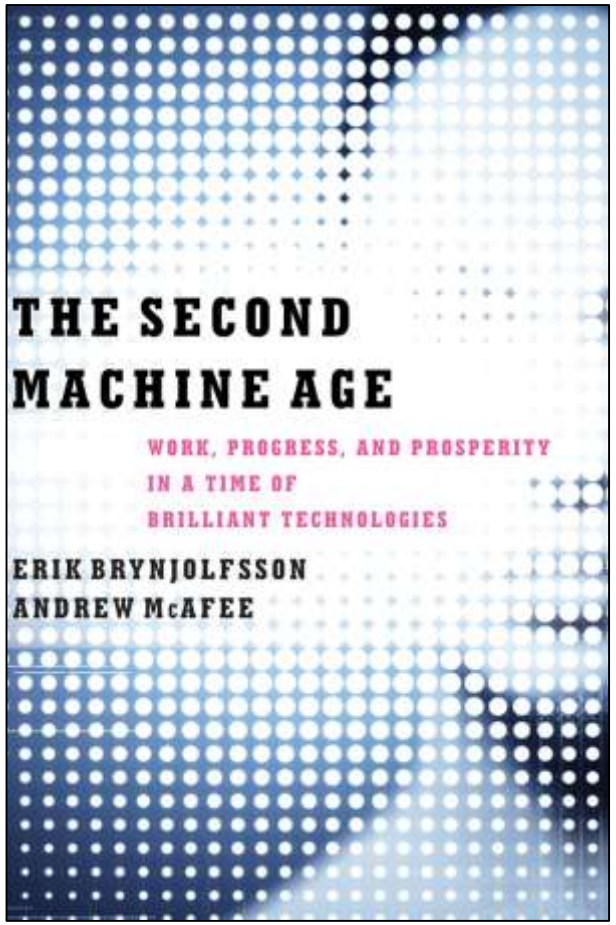
Answers to the above questions

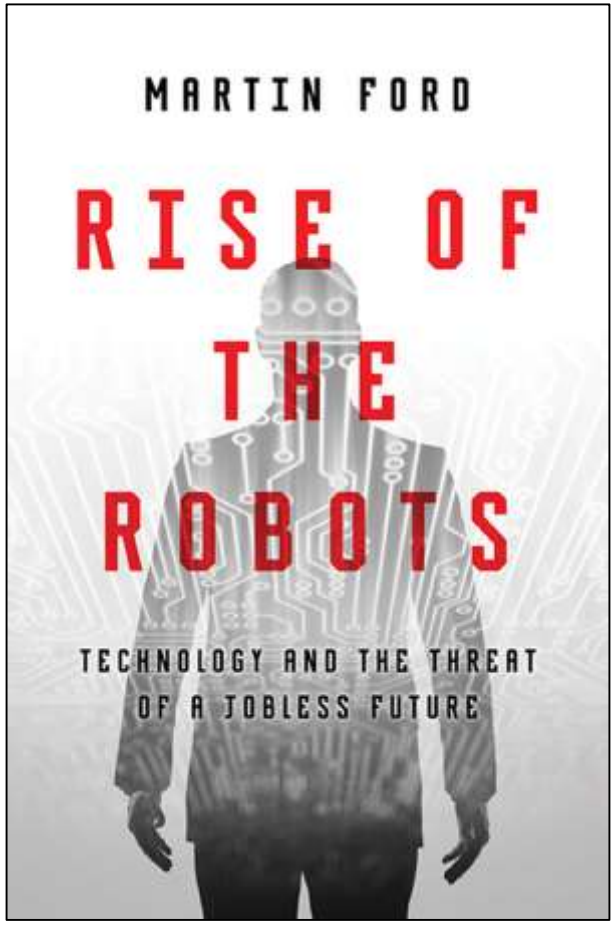
Harvard Business Review | “Data Scientists: The Sexiest Job of the 21st Century” (2012)

(https://hbr.org/2012/10/data-scientist-the-sexiest-job-of-the-21st-century/)

Source: Harvard Business Review

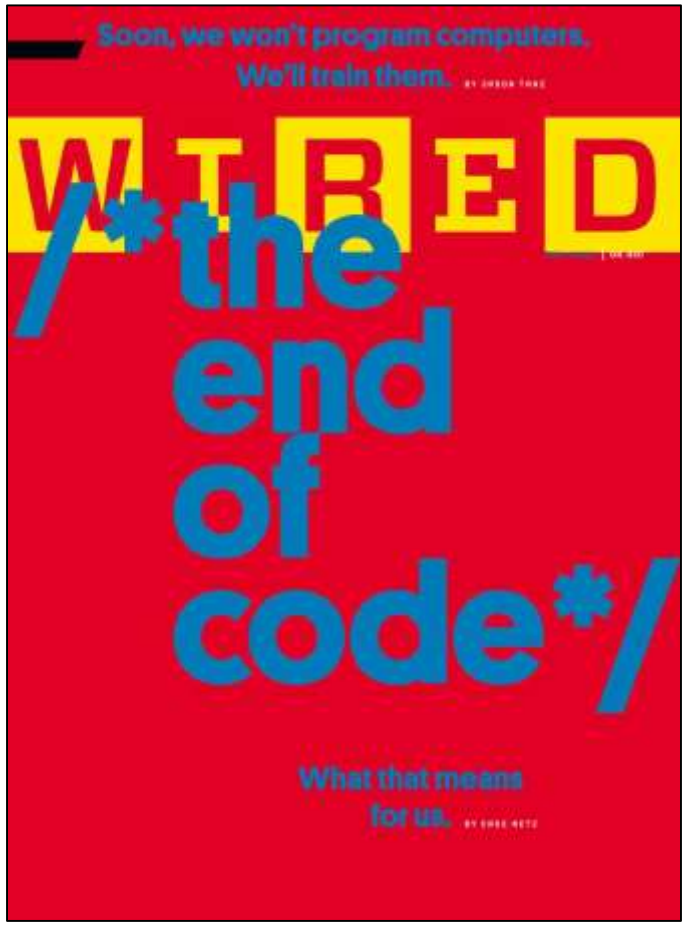
“The Second Machine Age” and “Rise of the Robots” (2016)

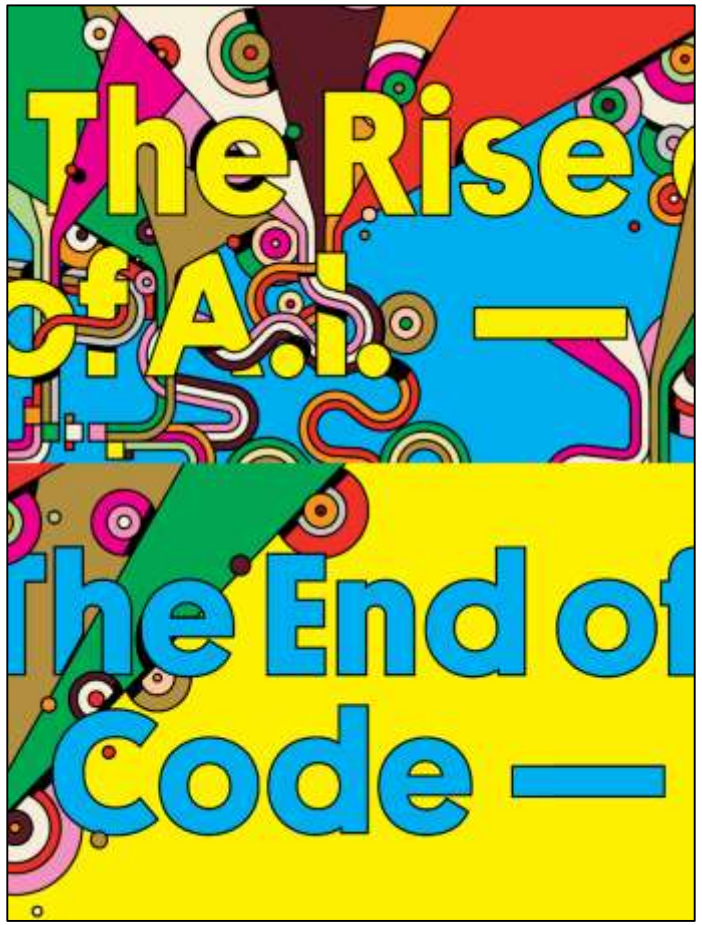




Wired | “The Rise of Artificial Intelligence and the End of Code” (2016)

(http://www.wired.com/2016/05/the-end-of-code/)

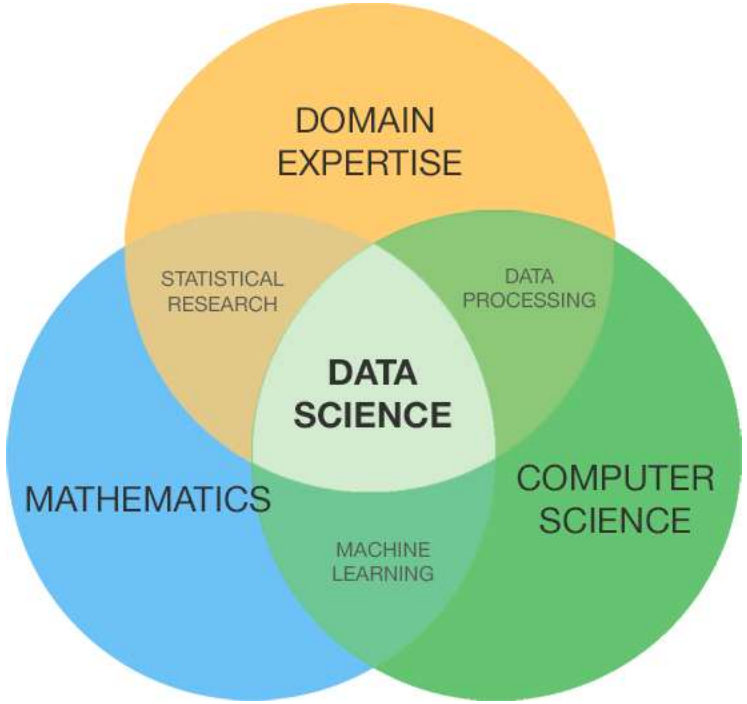




Source: Wired

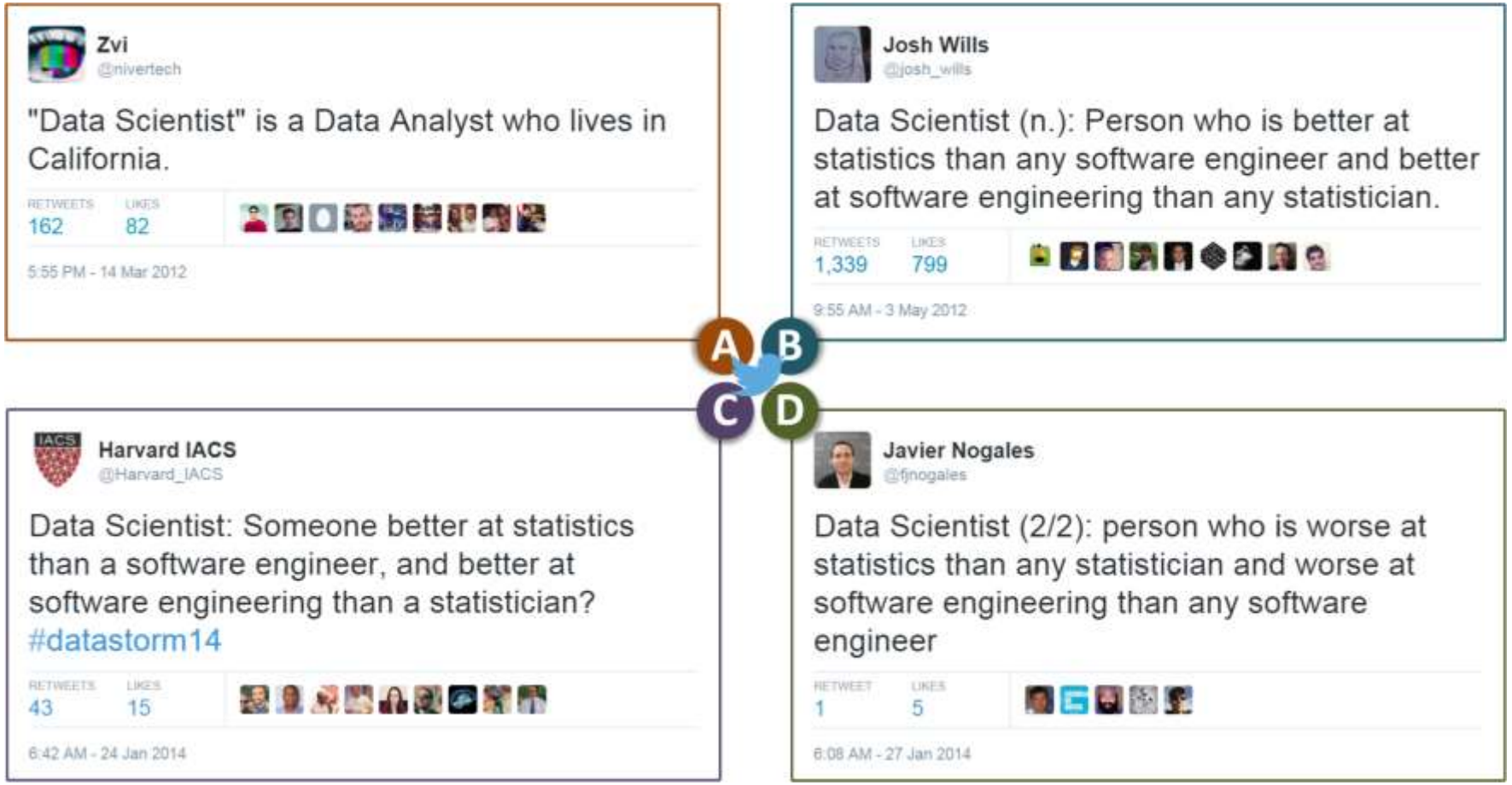
Data Science Businesses

Data Science involves a variety of skillsets



Source: Data Science for the C-suite

Data Scientists in ≤140 characters



Source: Twitter

Q & A

Installfest

Installfest

“GA” user

Installfest

GitHub Desktop

GitHub Desktop

- As part of its installation, GitHub Desktop will seamlessly setup encryption (SSH) keys (so you don't have to) to authenticate you against your repositories
- These keys will work within GitHub Desktop as well as on the *Terminal* when using "`git`" directly

GitHub Desktop

- Checking that you are correctly authenticated after installing GitHub Desktop and setting up your user profile:
  - Launch *Terminal* and check the output of the following command:

`ssh -T git@github.com` *(for GitHub)*

- If you get the following message, you are good to go:

```
Hi ■■■■■■■■! You've successfully authenticated, but GitHub does not provide shell access.
```

- Set some Git configuration:

```
git config --global push.default simple
```

Installfest

Continuum's Anaconda (Python 2.7)

Q & A

Git and Anaconda's Jupyter Notebook Primer

Git and Anaconda's Jupyter Notebook Primer

Practice #1 | Fork the course repository and clone your fork; update your clone and fork as needed

Practice #1 | How to *fork* the *course* repository and *clone* your *fork* (one-time only)

- ❶ Fork the GitHub course's repository into a new GitHub repository
  - Login into GitHub; open https://github.com/ga-students/DS-SF-25; click on the Fork button on the top right; your fork is at https://github.com/paspeur/DS-SF-25 (replace *paspeur* with your username)
- ❷ *Clone* your *fork* (a.k.a., the "*origin*" repository) into your computer
  - Open a new *Terminal*; type "`git clone https://github.com/paspeur/DS-SF-25`"; your clone is under the DS-SF-25 folder (type "`cd DS-SF-25`" to change the current directory to your clone's root directory)
- ❸ Set the GitHub *course*'s repository as the "*upstream*" repository
  - Within *Terminal*, type "`cd DS-SF-25`" to change the current directory to your *clone*'s root directory then "`git remote add upstream https://github.com/ga-students/DS-SF-25`"

Practice #1 | How to update your *clone* (*local* repository) and *fork* (*origin*/remote repository on GitHub) with new commits from the *course* repository (*upstream*/remote repository on GitHub)

- ❶ Fetch the newer commits from the *course* repository
  - `git fetch upstream`
- ❷ Merge and commit changes from the *course* repository to your *clone*
  - `git merge --no-commit upstream/master`
  - `git commit –m "Merged commits from ga-students/SF-DAT-25 up to 2016-07-13“`
    - (if the merge was “Fast-forward”, i.e., trivial, there is no need to commit these changes)
- ❸ Push from your *clone* to your *fork*
  - `git push`
    - (Git will ask you your GitHub credentials the first time around but will remember them afterwards)

Git and Anaconda's Jupyter Notebook Primer

Practice #2 | Run Anaconda's Jupyter Notebook

Practice #2 | How to run Anaconda's Jupyter Notebook on your *clone*

- ⓿ Open a new *Terminal* and change the current directory to your *clone*'s root directory
  - `cd DS-SF-25`
- ❶ Start Jupyter Notebook
  - `jupyter notebook`
    - (Jupyter Notebook will be running on the background and won't return the prompt back to you; open a new *Terminal* as needed)

Git and Anaconda's Jupyter Notbook Primer

Practice #3 | How to add or modify existing and commit them in your clone and fork (e.g., your Unit Project #1)

Practice #3 | How to add or modify existing and commit them in your *clone* and *fork* (e.g., your Unit Project #1)

- ⓿ Open a new *Terminal* and "cd" (change directory) to your *clone*'s root repository
  - `cd DS-SF-25`
- ❶ Make a copy of the Unit Project #1 Jupyter notebook
  - `cp unit-projects/1/code/unit-project-1-starter-code.ipynb unit-projects/1/code/unit-project-1-ivan.ipynb`
- ❷ Update and save the notebook
- ❸ Stage your Jupyter notebook (this is the same command whether a file is new or already exist)
  - `git add unit-projects/1/code/unit-project-1-ivan.ipynb`
- Repeat ❷ and ❸ as often as you need it
  - Commit early and often (http://blog.codinghorror.com/check-in-early-check-in-often)

Practice #3 | How to add or modify existing and commit them in your *clone* and *fork* (e.g., your Unit Project #1) (cont.)

- ❹ Commit your Jupyter notebook to your *clone*
  - `git commit –m "a descriptive message so you know what this change is about in 3 months or next week..."`
- ❺ Push from your *clone* to your *fork*
  - `git push`
- But if you can't *push*, you need to *merge*
  - Git may complain that changes in your fork aren't in your clone and that you first need to synchronize from your fork back to your clone first; check the `git fetch/merge` slide from Practice #1

Practice #3 | How to add or modify existing and commit them in your *clone* and *fork* (e.g., your Unit Project #1) (cont.)

- And if you can't *merge*, you have *conflict(s)* you need to *resolve*
  - E.g., you are trying to push changes that modify the same cell that a previous commit on the fork but not on the clone also changed. Because both commits aren't compatible with each other, Git errors out to let you resolve the merge manually)
  - You won't be able to resolve the conflict with Jupyter Notebook: Git's annotation of the conflict broke the structure of the notebook
- ① Take notes of conflicts
  - `git diff unit-projects/1/code/unit-project-1-ivan.ipynb`
  - The output will tell you in plain text where the conflicts occur. Make notes of them
- ② Undo the merge for the time being
  - `git reset --hard`

Practice #3 | How to add or modify existing and commit them in your *clone* and *fork* (e.g., your Unit Project #1) (cont.)

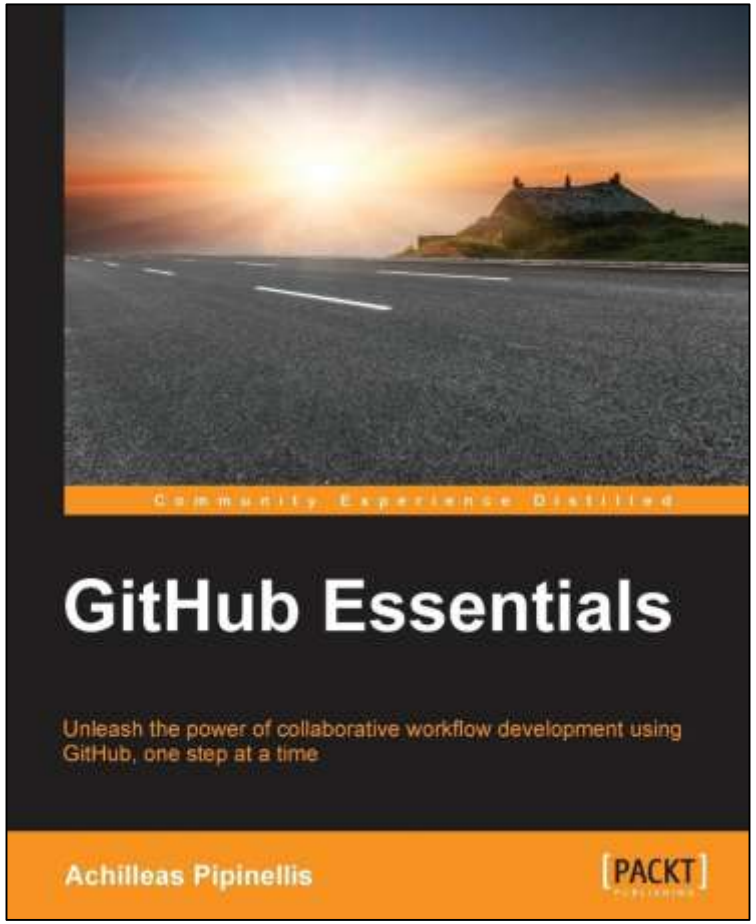
- ③ Make a copy of your pre-merge changes because you will apply them manually
  - `cp unit-projects/1/code/unit-project-1-ivan.ipynb unit-projects/1/code/unit-project-1-ivan-pre-merge.ipynb`
- ④ Merge again; of course, you'll get the same conflicts
  - `git merge`
- ⑤ Checkout the copy from the fork
  - `git checkout --theirs unit-projects/1/code/unit-project-1-ivan.ipynb`

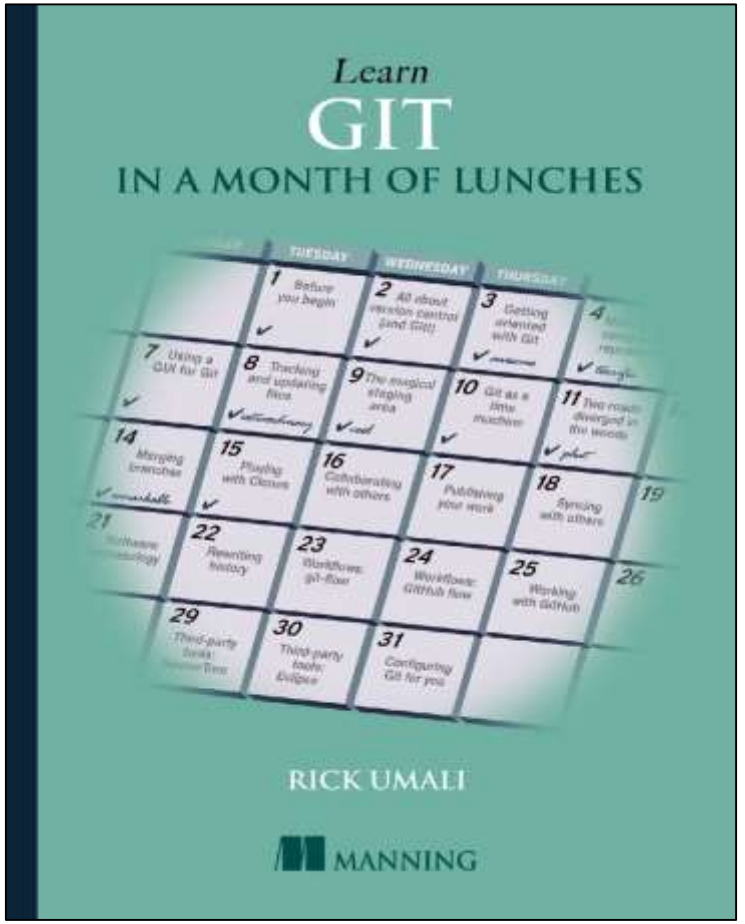
Practice #3 | How to add or modify existing and commit them in your *clone* and *fork* (e.g., your Unit Project #1) (cont.)

- ⑥ Now you can use Jupyter Notebook to open both *unit-project-1-ivan.ipynb* (the last version in your *fork*) and unit-project-1-ivan-pre-merge.ipynb (the last version in your *clone* that you wanted to push)
  - Copy and paste the relevant sections from unit-project-1-ivan-pre-merge.ipynb back to unit-project-1-ivan.ipynb
- ⑦ Tell Git you resolve the conflicts
  - `git add unit-projects/1/code/unit-project-1-ivan.ipynb`
- ⑧ Finally, commit and push… (like we've done a few times already)
  - `git commit –m "Updated Unit Project #1“`
  - `git push`

Q & A

A couple of resources to get started with Git *(optional; not required for the course)* (the styles are different but the content overlaps so only pick one if any)

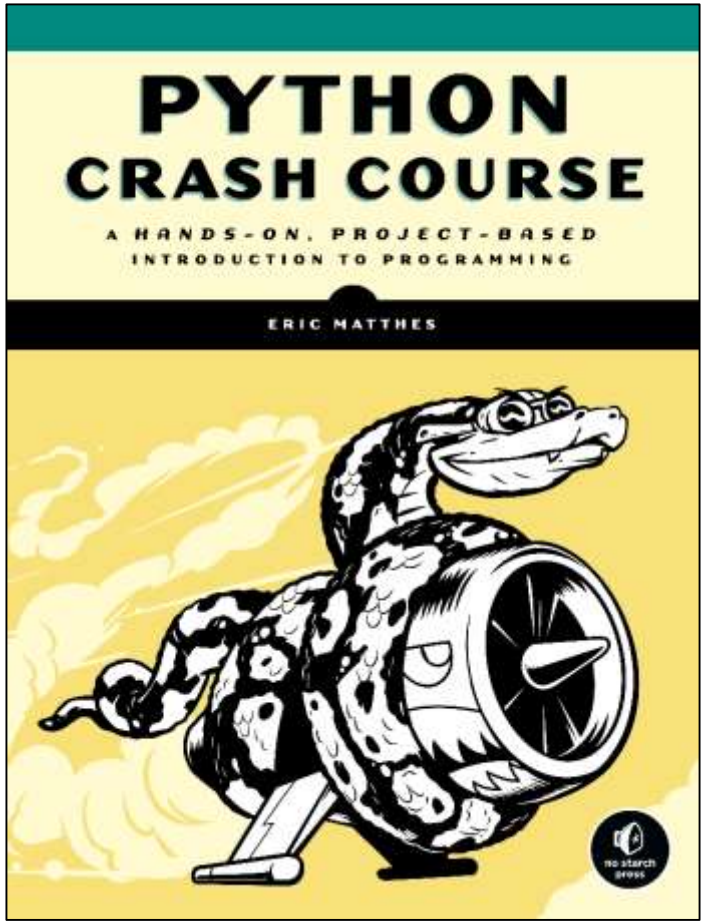


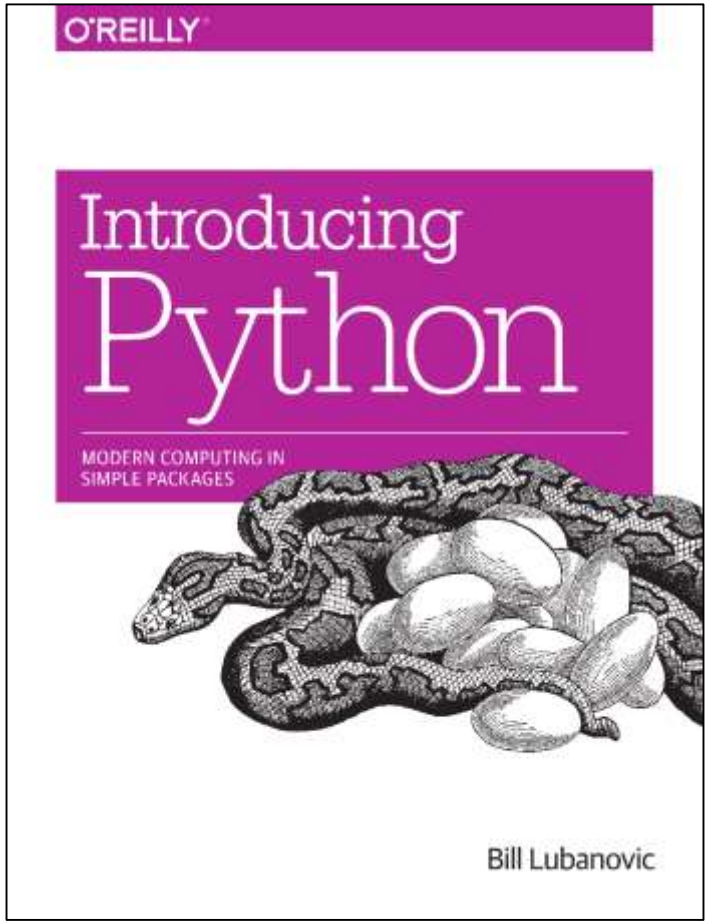


Lab

Python Review

A couple of resources to get started with Python *(optional; not required for the course)* (the styles are different but the content overlaps so only pick one if any)





Review

Review

You should now be able to answer the following questions:

- Describe the roles and components of a successful learning environment
- Define data science and data scientists
- Setup your development environment and practice the different workflows used in the course

Q & A

Before Next Class

Before Next Class

- Complete your development environment setup and practice the different workflows used in the course
- Complete the onboarding pre-work
- Look into the first unit project
- Start ideating about your final project's topic

Next Class

Research Design and pandas

Learning Objectives

After the next lesson, you should be able to:

- Define the data science workflow
- Define a problem and types of data
- Identify dataset types
- Apply the data science workflow in the *pandas* context
- Write an Jupyter notebook to import, format, and clean data using the *pandas* library

Exit Ticket

Don’t forget to fill out your exit ticket here