

# Meeting of the Technical Advisory Council (TAC)

November 19, 2020

 **DLF** AI & DATA

# Anti-Trust Policy

- › Linux Foundation meetings involve participation by industry competitors, and it is the intention of the Linux Foundation to conduct all of its activities in accordance with applicable antitrust and competition laws. It is therefore extremely important that attendees adhere to meeting agendas, and be aware of, and not participate in, any activities that are prohibited under applicable US state, federal or foreign antitrust and competition laws.
- › Examples of types of actions that are prohibited at Linux Foundation meetings and in connection with Linux Foundation activities are described in the Linux Foundation Antitrust Policy available at <http://www.linuxfoundation.org/antitrust-policy>. If you have questions about these matters, please contact your company counsel, or if you are a member of the Linux Foundation, feel free to contact Andrew Updegrave of the firm of Gesmer Undergone LLP, which provides legal counsel to the Linux Foundation.

# Recording of Calls

- › **Reminder:**

- ›

- › TAC calls are recorded and available for viewing on the [TAC Wiki](#)

# Reminder: LF AI & Data Useful Links

- › Web site: [lfai.foundation](http://lfai.foundation)
- › Wiki: [wiki.lfai.foundation](http://wiki.lfai.foundation)
- › GitHub: [github.com/lfai](https://github.com/lfai)
- › Landscape: [landscape.lfai.foundation](http://landscape.lfai.foundation) or [l.lfai.foundation](http://l.lfai.foundation)
- › Mail Lists: <https://lists.lfai.foundation>
- ›
- › LF AI Logos: <https://github.com/lfai/artwork/tree/master/lfai>
- › LF AI Presentation Template:  
[https://drive.google.com/file/d/1eiDNJvXCqSZHT4Zk\\_-czASlz2GTBRZk2/view?usp=sharing](https://drive.google.com/file/d/1eiDNJvXCqSZHT4Zk_-czASlz2GTBRZk2/view?usp=sharing)
- ›
- › Events Page on LF AI Website: <https://lfai.foundation/events/>
- › Events Calendar on LF AI Wiki (subscribe available):  
<https://wiki.lfai.foundation/pages/viewpage.action?pageId=12091544>
- › Event Wiki Pages: <https://wiki.lfai.foundation/display/DL/LF+AI+Foundation+Events>

# Agenda

- › Roll Call (2 mins)
- › Approval of Minutes (2 mins)
- › Invited Presentations (15 minutes each)
  - › OpenDS4All
  - › DataPractices.org
  - › edX project - AI Ethics
- › LF AI General Updates (3 minutes)
- › Open Discussion (3 minutes)

# TAC Voting Members

Board Member	Contact Person	Email
AT&T	Anwar Atfab	<a href="mailto:anwar@research.att.com">anwar@research.att.com</a>
Baidu	Ti Zhou	<a href="mailto:zhouti@baidu.com">zhouti@baidu.com</a>
Ericsson	Rani Yadav-Ranjan	<a href="mailto:rani.yadav-ranjan@ericsson.com">rani.yadav-ranjan@ericsson.com</a>
Huawei	Huang Zhipeng	<a href="mailto:huangzhipeng@huawei.com">huangzhipeng@huawei.com</a>
IBM	Susan Malaika	<a href="mailto:malaika@us.ibm.com">malaika@us.ibm.com</a>
Nokia	Jonne Soininen	<a href="mailto:jonne.soininen@nokia.com">jonne.soininen@nokia.com</a>
SAS	Craig Rubendall	<a href="mailto:craig.rubendall@sas.com">craig.rubendall@sas.com</a>
Tech Mahindra	Nikunj Nirmal	<a href="mailto:nn006444@techmahindra.com">nn006444@techmahindra.com</a>
Tencent	Bruce Tao	<a href="mailto:brucetao@tencent.com">brucetao@tencent.com</a>
Zilliz	Jun Gu	<a href="mailto:jun.gu@zilliz.com">jun.gu@zilliz.com</a>
ZTE	Wei Meng	<a href="mailto:meng.wei2@zte.com.cn">meng.wei2@zte.com.cn</a>
Graduate Project	Contact Person	Email
Acumos	Nat Subramanian	<a href="mailto:natarajan.subramanian@techmahindra.com">natarajan.subramanian@techmahindra.com</a>
Angel	Bruce Tao	<a href="mailto:brucetao@tencent.com">brucetao@tencent.com</a>
Egeria	Mandy Chessell	<a href="mailto:mandy_chessell@uk.ibm.com">mandy_chessell@uk.ibm.com</a>
Horovod	Travis Addair	<a href="mailto:taddair@uber.com">taddair@uber.com</a>
ONNX	Jim Spohrer (Chair of TAC)	<a href="mailto:spohrer@us.ibm.com">spohrer@us.ibm.com</a>

# Approval of November 5, 2020 Minutes

Draft minutes from the November 5<sup>th</sup> TAC call were previously distributed to the TAC members via the mailing list

## **Proposed Resolution:**

- › That the minutes of the November 5<sup>th</sup> meeting of the Technical Advisory Council of the LF AI & Data Foundation are hereby approved.

# Invited Presentation

OpenDS4All -

- Andre de Waal (IBM)



# OpenDS4All

An Open Source Approach to Data Science Education

Andre de Waal

October 2020

# An Open Source Approach to Data Science Education

- A Data Science Curriculum Kit built on Open Source (Python)
- Built by professors at the University of Pennsylvania
- Launched as an Open Source Project under the Linux Foundation Governance to ensure updates and growth

## GOAL

Enable Organizations to  
build their own Data  
Science Educational  
Programs

<https://github.com/odpi/OpenDS4All>

# Lessons (topics) covered in the initial modules

## Course Description

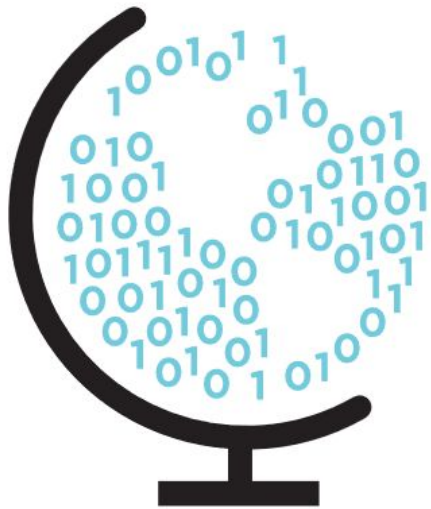
- Introduction: What is Data Science?
- How Your Computer Works
- Getting Started in Data Science: Data Acquisition and Wrangling
- Information Visualization, aka Visual Analytics
- Data representation and Modeling
- Scaling to Big Data and the Cloud
- Cluster-Based Processing of Graph Data
- Efficient Data Processing
- Network Centrality and PageRank
- PageRank and Graph Analysis Using Linear Algebra
- Unsupervised Machine Learning
- Supervised Machine Learning: Overview, Decision Trees, Random Forests
- Supervised Machine Learning: Linear and Logistic Regression
- Supervised Machine Learning: Artificial Neural Networks
- Training Robust Models
- Data Science Ethics

# Governance

## Technical Steering Committee

- David Mongeau (Executive Director, Berkeley Institute for Data Science, University of California, Berkeley)
- Susan Davidson (Professor, Computer and Information Science, UPenn)
- Zack Ives (Professor, Computer and Information Science, UPenn)
- Jennifer Priestley (Professor, Analytics and Data Science Institute, Kennesaw State University)
- Aric LaBarr (Professor, Institute for Advanced Analytics, NC State)
- Goutam Chakraborty (Professor, Spears School of Business, OSU)
- Ana Echeverri (IBM)
- Andre de Waal (IBM) – chairperson
- James Harroun (SAS Institute)

<https://github.com/odpi/OpenDS4All>



# OpenDS4All



## Description

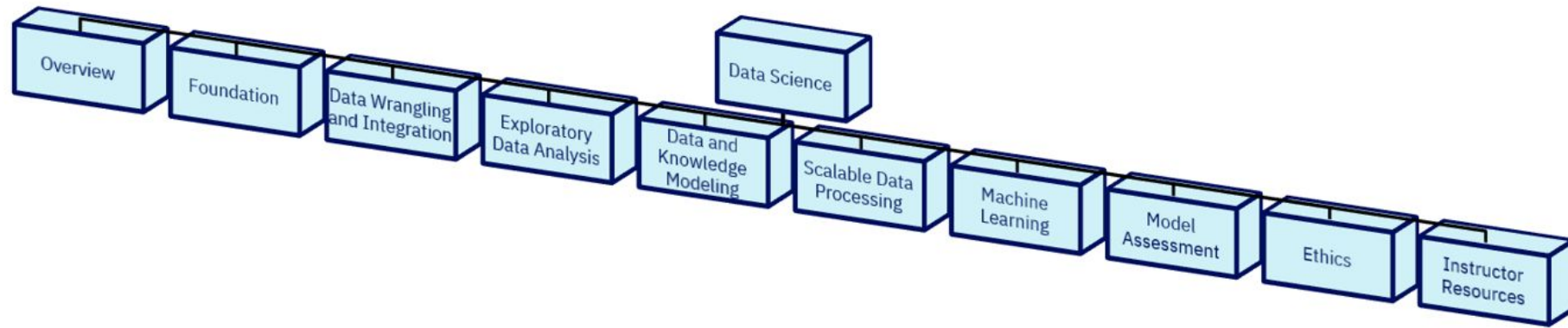
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OpenDS4All is a project created to accelerate the creation of data science curricula at academic institutions. While a great deal of online material is available for data science, **including** online courses, we recognize that the **best** way for many students to learn (and for many institutions to deliver) content is through a combination of lectures, recitation or flipped classroom activities, and hands-on assignments.

OpenDS4All attempts to fill this important niche. Our goal is to provide recommendations, slide sets, sample Jupyter

# How to use

The following topology shows how content is **currently** organized around categories. This is a living/dynamic taxonomy that is updated as new content is added to the project.



Each category contains modules and each module consists of one or more of the following components:

- instructor notes ( `Instructor_Notes.md` ) and guide to files
- a set of PowerPoint slides (with presenter notes) ending in `.pptx`
- companion Jupyter notebooks, for students to see the lecture materials "in context" and to be able to experiment
- sample quiz materials (where applicable)
- sample homework assignments (where applicable)
- additional documentation (where applicable)

Branch: master ▾

OpenDS4All / opens4all-resources / opens4all-overview /

Create new file

Upload files

Find file

History



SusanBDavidson and zackives test ...

Latest commit 82bec3a 25 days ago

..

INTRODUCTION-Data-Science-basic.pptx	Susan's changes based on Ana's feedback	last month
Instructor_Notes.md	Updates for spellcheck and Markdown lint	last month
Quiz.md	Fixed line breaks.	28 days ago
README.md	test	25 days ago

README.md



# Overview: What is Data Science?

This module provides a broad overview of modern data science, data analytics / data engineering, and big data. It sets the context for the OpenDS4All curriculum.

## Directory Contents

# Motivation for the Course: Data Is Driving Everything

1. Modern data acquisition is inexpensive!
  - Smartphones, embedded systems, inexpensive sensors,
  - Medical devices, simulators, ...
2. Data storage is inexpensive!
3. Parallel (compute cluster) computation is inexpensive
  - The Cloud, clusters of computers, GPUs, tensor processors, ...



Can we use **algorithms + data** to understand phenomena? Build or augment **models**? Build **detectors**? Make **diagnoses**?

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There is data everywhere. It is constantly being collected (e.g. through smartphones, IoT sensors, Alexa) and contributed (e.g. through Facebook and Twitter). Storage is cheap, and compute power readily available and rapidly increasing. Computer clusters are available to enable parallelism, and special architectures developed for ML operations. All this is available not just for those who can afford to own them but through the commodity of the cloud..

This increased ability to collect, store and process data has led to a revolution in how we do things in almost every field, from biological sciences to social sciences, humanities, political science, policy, marketing and so on. But just because we have the data doesn't imply we understand it. It must be processed to derive information, make models, enable predictions, and make diagnoses. We want to use the data to develop (or augment) models using machine learning and other algorithms.

That is the essence of this course.

## Introduction: What Is Data Science?



## Motivation for the Course: Data Is Driving Everything

1. Modern data acquisition is inexpensive!
  - Smartphones, embedded systems, inexpensive sensors,
  - Medical devices, simulators, ...
2. Data storage is inexpensive!
3. Parallel (compute cluster) computation is inexpensive
  - The Cloud, clusters of computers, GPUs, tensor processors, ...



## The Key Question in Data Science: How Do We Explain & Predict the World?

Models of science and engineering derive from physics, where we have rich predictive models.  
However, there are many situations where we have materials that do not have simple models.  
The basis of prediction needs to be simulation.  
How do we make predictions where we don't have good models?  
e.g., human behavior, biology, the brain, whether a protein will be successful, what is the best?  
We need to use sampling, statistics, and then find approaches.  
How do we use enough representative data, and the right questions, for good models?  
Of course, in the real world we often want to combine models and data!

## Outline of Topics

- What is data science?
- Considerations around big data
- What does analytics involve?
- Disclaimer and recap
- Checkpoint exercises
- Practice notebook

## Wordcloud for Data Science



## Data Science is Interdisciplinary

(CS+STAT+MATH)  
(S)  
(SCIENCE |  
ECONOMICS |  
SOCIOLOGY |  
BUSINESS |  
LAW...)





Branch: master ▾

Create new file

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History

[OpenDS4All](#) / [opens4all-resources](#) / [opens4all-exploratory-data-analysis](#) /



**zackives** More detail on presentation, added preview for ML, removed comments

✓ Latest commit 7803f46 16 days ago

..



[README.md](#)

Exploratory data analysis - visual analytics

21 days ago



[VISUAL-ANALYTICS-visualization.ip...](#)

added crawled dataset for module 1 wikipedia etc

20 days ago



[VISUAL-ANALYTICS-visualization.p...](#)

More detail on presentation, added preview for ML, removed comments

16 days ago

 README.md



# Exploratory Data Analysis

The topic of exploratory data analysis is extremely important in discovering and formulating hypotheses. A key aspect of that process is *visual analytics* or *information visualization*, which allows one to see certain aspects of the data holistically. This module is focused on such topics.

## Directory Contents

1 lines (1 sloc) | 200 KB



Raw

Blame

History



## Lecture 1: Wrangling

In this lecture notebook, we will test the hypothesis that the CEOs of major companies are typically in their 40s or older, i.e. that they were born after 1980. To do this, we will identify top companies, find their CEOs, extract their ages, and look at the distribution of ages.

```
In [1]: # Let's start by installing some libraries that are useful for processing web data.
```

```
# For crawling pages
```

```
!pip3 install scrapy
```

```
## Optional, for parallel execution
```

```
!pip3 install swifter
```

```
## For string similarity
```

```
!pip3 install py_stringsimjoin
```

```
## lxml to parse xml tree
```

```
!pip3 install lxml
```

```
Collecting scrapy
```

```
  Downloading https://files.pythonhosted.org/packages/3b/e4/69b87d7827abf03dea2ea984230d50f347b00a7a3897bc93f6ec3dafa494/Scrapy-1.8.0-py2.py3-none-any.whl (238kB)
```

```
 |██████████████████████████████████████████| 245kB 2.7MB/s
```

```
Collecting w3lib>=1.17.0
```

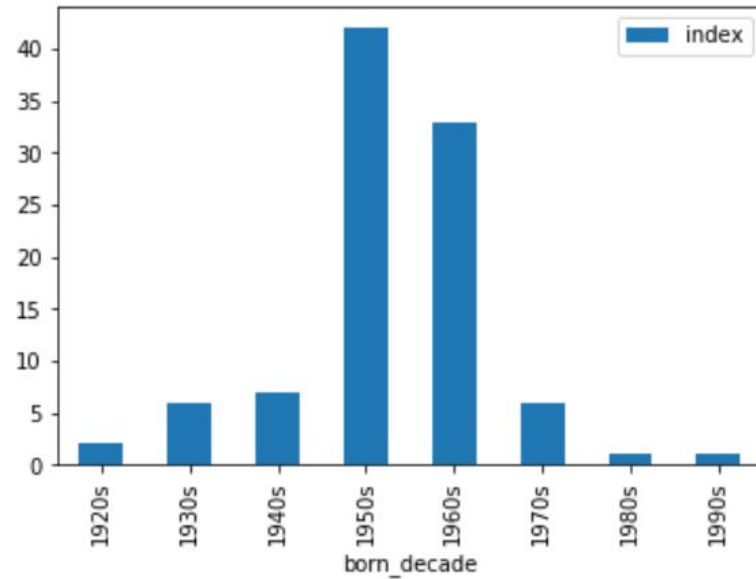
```
  Downloading https://files.pythonhosted.org/packages/6a/45/1ba17c50a0bb16bd950c9c2b92ec60d40c8ebda9f3371ae4230c437120b6/w3lib-1.21.0-py2.py3-none-any.whl
```

```
Collecting protego>=0.1.15
```

In [35]: `# Plot the result.`

```
exec_df[['born_decade']].reset_index().groupby('born_decade').count().plot(kind='bar')
```

Out[35]: `<matplotlib.axes._subplots.AxesSubplot at 0x7fa0045d84e0>`



**So are most CEO's born before 1980s?**

## 7. An Exercise

Take this one step further, and link the companies table with another dataset to determine the market for each company.

Is there a correlation between the kind of company and the age of the CEO?

# Adopters of OpenDS4All content

5 lines (5 sloc) | 510 Bytes

Raw

Blame



Search this file...

	Academic Institution	Country	Program	Course	Faculty Member	Number of Students
1	Kennesaw State University	USA	Interdisciplinary	DS7900	Jennifer Priestley	25
2	Oklahoma State University	USA	MS in Business Analytics and Data Science	BAN 5743 5753 5763	Goutam Chakraborty	150
3	University of North Carolina at Charlotte	USA	Computer Science	ITCS6100 Introduction to Data Science	Wlodek Zadrozny	25
4	Imperial College London	UK	Design Engineering	DESE50001 Data Science	Michel-Alexandre Cardin	50

andre.dewaal@ibm.com

<https://github.com/odpi/OpenDS4All>

## Collaborating with the project – Help us Find.....

- Contributors
  - Faculty to contribute curricula
- Committers
  - Faculty to ensure curricula integrity

- Adopters
  - Organizations building Data Science academic programs

[andre.dewaal@ibm.com](mailto:andre.dewaal@ibm.com)

<https://github.com/odpi/OpenDS4All>

# Invited Presentation

DataPractices.Org

- Patrick McGarry (Data.World)



# DataPractices.org

## The Agile movement for data

Patrick McGarry

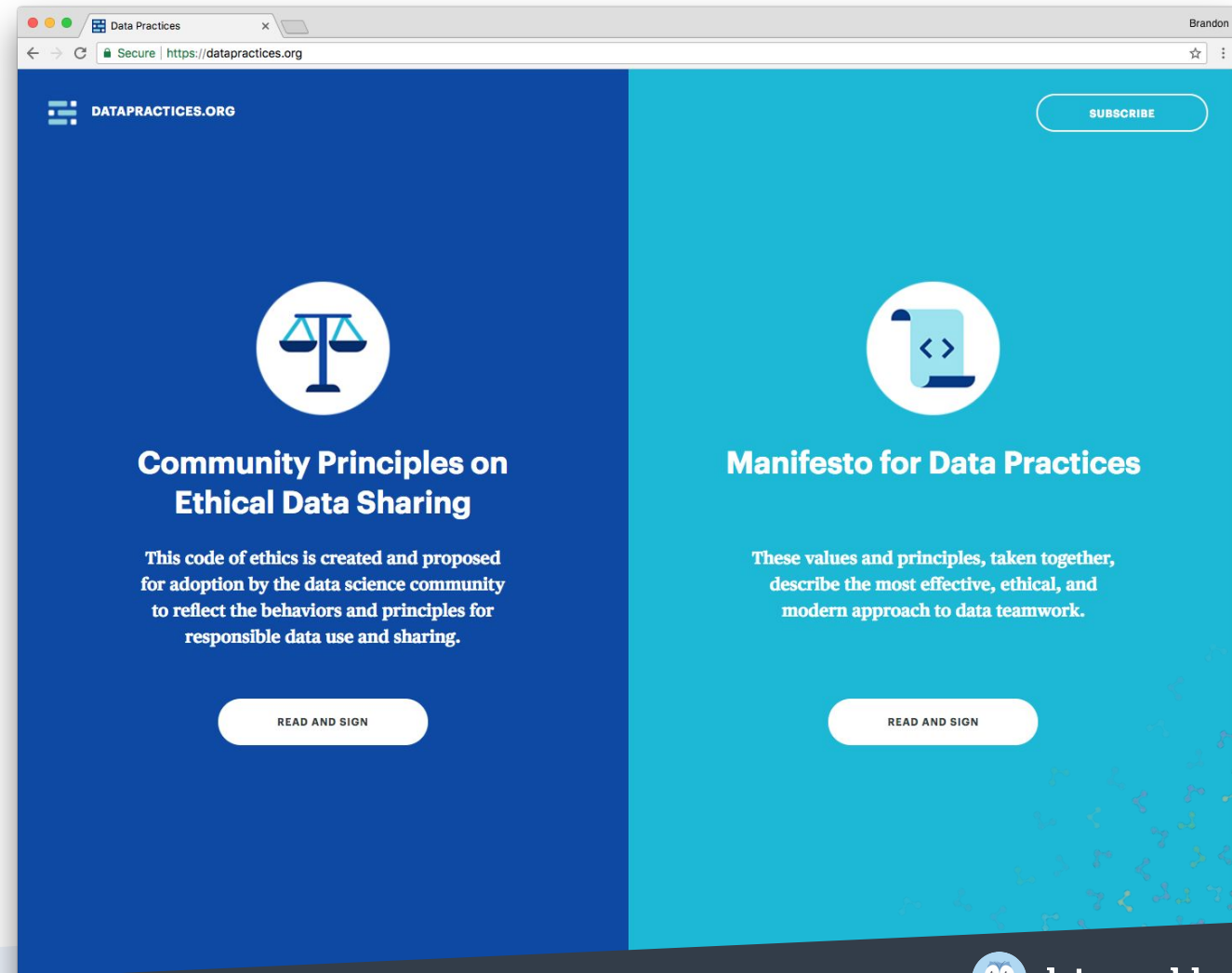
<https://datapactices.org>

## Manifesto for Data Practices

1. First release successful
2. Community-driven
3. Still gathering signatures
4. **Origination:** [ODSLS](#)
5. **Focus:** Data work

## Global Data Ethics Pledge

1. Was: Community Principles on Ethical Data Sharing
2. Work in progress
3. Community-driven (via D4D)
4. Community draft released
5. **Origination:** Bloomberg, D4D, Brighthive
6. **Focus:** Data Ethics





# Recent Evolution

- **Two collections of content**
  - Project Lifecycle
  - Culture / Practice
- **Community Reviewed / Maintained**



- **Community**
  - Carpentries
  - Zuar
  - Brian Granger / Fernando Perez
  - Data Society
  - UCLA
  - Oracle
  - Comcast
  - Microsoft
- **Commercial**
  - Praxis Analytics
  - The Data Incubator
  - Data Literacy



## Supported by leaders of the data community


### 39 authors, including:

- **Eric Colson**, Chief Algorithms Officer, StitchFix
- **Amy Gershkoff**, former Chief Data Scientist, Ancestry.com
- **Fernando Perez**, creator of iPython, Assistant Professor, Statistics, UC Berkeley
- **Andrew Therriault**, Chief Data Officer, City of Boston
- **Therese Couture**, Human Trafficking Data Analyst, Polaris
- **Wes McKinney**, BDFL, Pandas

### 2,200+ signatories, including:

- **DJ Patil**, former Chief Data Scientist of the United States
- **Monica Rogati**, former VP of Data Science, Jawbone
- **Kirk Borne**, Principal Data Scientist, Booz Allen Hamilton
- **Tricia Wang**, Fellow, Harvard Berkman Center
- **Jonathan Albright**, Research Director, Tow Center for Digital Journalism
- **Gregory Piatetsky**, founder, KDnuggets.com

# Courseware



# Project Lifecycle

- Kicking off a data project
- Sourcing Data
- Profile and Prepare
- Data Exploration
- Analyze and Report
- Data Project Post-Mortem



# Culture / Practice

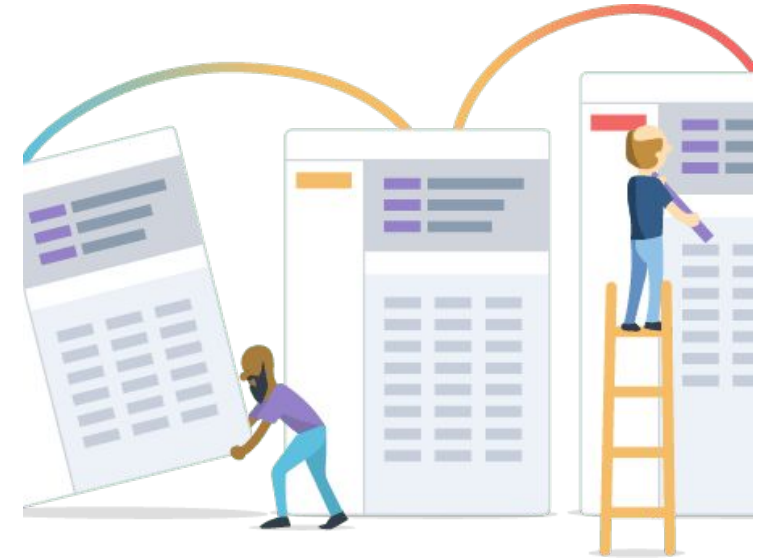
- **How to Build a Data-Driven Culture**
- **A Survey of Data Visualization**
- **Moving from Computer Science to Data Science**
- **Data Science for People Who Don't Code**
- **Data Visualization Best Practices**
- **Data Ethics 101**

# Live Look



# What's Next?

- **Courseware**
  - Engage existing volunteers
  - Expand content collaboration (OpenDS4All)
  - Deploy and use content
- **Principles**
  - Continue to build on momentum of signatories
  - Use as basis of CoC and Ethics development



Questions?



# Appendix

The world of modern data teamwork isn't one that can be created by software and business process alone. Individuals will need to alter their behavior, which is the hardest part about change.

This workshop will show you not only how to help your team evolve, but the reasons that will make it clear as to why they should.

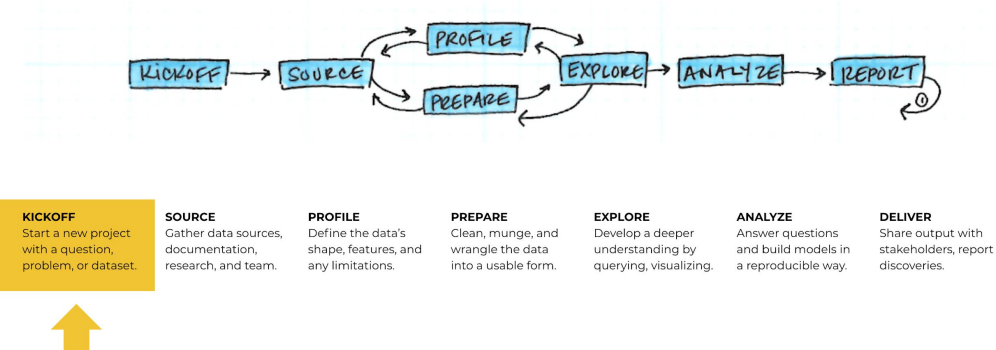
- **Topics covered:**
  - **Play bigger / Winning With Data**
  - **Pillars of a data-driven company**
    - Data infrastructure
    - Data governance
    - Data literacy
  - **Data driven leadership**
  - **Data Literacy (ex: Facebook data bootcamp)**
  - **Data access / dictionary / single source of truth**
  - **Decision making (answer real questions, not frivolous dashboards)**
  - **Data isn't everything, don't get paralyzed**
  - **Be patient, change takes time**
  - **Hold employees accountable, but create social conduits for them to get help**
  - **Newsletter**
  - **Treat data like an asset! (operationalized!)**
  - **Create quantifiable goals that are aligned with business objective**
  - **Data governance isn't a dirty word**
  - **Break down silos (80% of data is never analyzed)**
  - **Ask questions:**
    - "Do you have a data portal/platform?"
    - "What %age of your employees use it each week? (AirBnB/Warby Parker)"



Effective data collaboration takes more than giving everyone access. Inclusion, flexibility, setting, and prioritization are also keys to fruitful data work.

This workshop will help you to understand Data Practices values and principles, which describes the most effective, ethical, and modern approach to data teamwork, and how to best kick off a modern data project. Signed by some of the brightest minds in data, these values can create positive change wherever data collaboration occurs.

- **Topics covered:**
  - **History of data practices movement**
  - **Break down objectives**
  - **Consider stakeholders**
  - **Refining questions**
  - **Planning for output / solution**

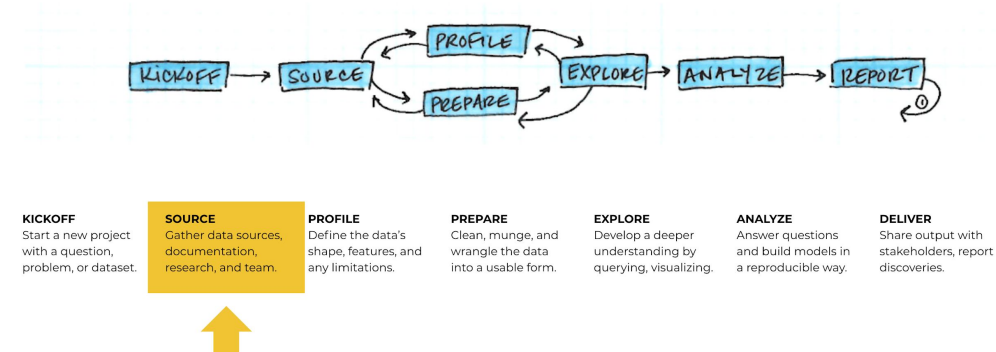


Once you have planned out a data project it's time to gather your resources. There are many things to consider, including where data, documentation, and additional team members can be sourced.

This workshop will help you to understand how to evaluate data project resources including how to aggregate your existing data, the benefits of open data (both using and generating), the pros and cons of purchased data, and how to ensure that your data project can avoid costly pitfalls caused by problems around data provenance, data prep, or anything else.

- Topics covered:

- Defining the question you're asking
  - Identify the right metrics
  - Qualitative vs quantitative
- Importance of the right data
  - "Garbage in, garbage out"
- Open vs closed
- How to find:
  - Data sources
  - Documentation
  - Research
  - Team members
- Purchasing data + / -
- Things to consider
  - Provenance
  - Source
  - Creation methodology
  - Distribution / size of data
- Joining / Normalizing data



Once you have all of your data, team, documentation, and other resources in place, it's time to dig in and go to work.

This workshop will help users to understand how to effectively evaluate and define their data. Understanding the shape of your data, what features and limitations may be inherent in the data, what data might be missing or improperly formatted, and many other things can help a data team to get the most out of their data.

After profiling your data you'll need to clean and prepare your data for actual use. This workshop will help you understand some of the common methods of cleaning data and how both technical and non-technical team members can assist with this process.

● Topics covered:

○ Profile the data

■ Define data's:

- Shape
- Features
- Limitations

■ Content discovery

- what's in the data, what's missing
- Null or ambiguous content
- Incorrectly formatted data (ex: emails)
- Range (and other numerical/quant) analysis

■ Relationship discovery

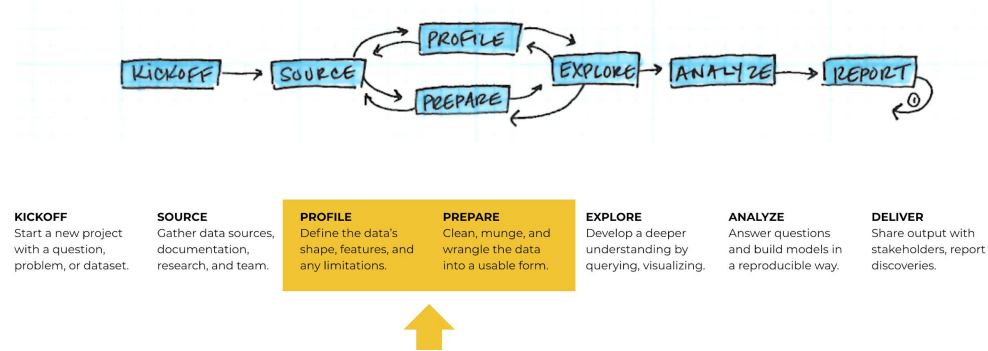
- matchable / relatable datasets
- vectors for linkage
- Where is the data in use

○ Prepare

■ Clean the data

■ Wrangle/munge data into usable form

■ Queries



**KICKOFF**  
Start a new project with a question, problem, or dataset.

**SOURCE**  
Gather data sources, documentation, research, and team.

**PROFILE**  
Define the data's shape, features, and any limitations.

**PREPARE**  
Clean, munge, and wrangle the data into a usable form.

**EXPLORE**  
Develop a deeper understanding by querying, visualizing.

**ANALYZE**  
Answer questions and build models in a reproducible way.

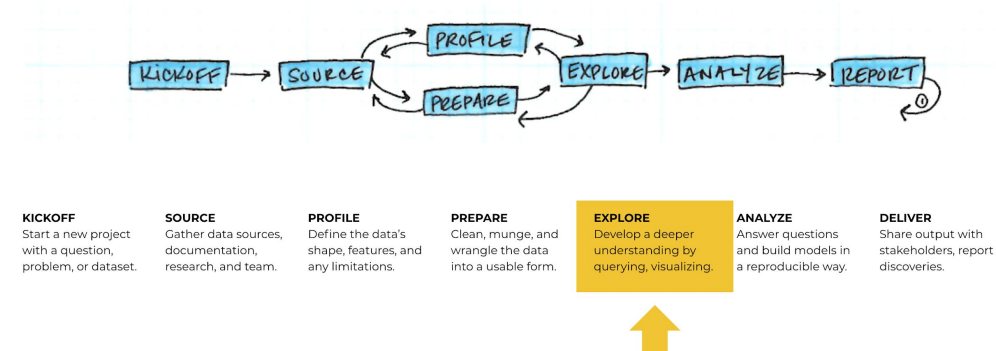
**DELIVER**  
Share output with stakeholders, report discoveries.



This workshop will help you develop a deeper understanding of your data through querying, visualizing, or other initial exploration techniques.

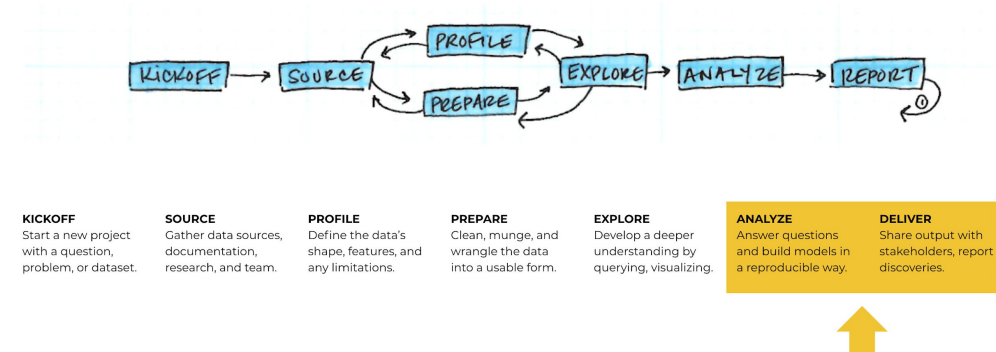
● Topics covered:

- Query building
- Data slicing / sampling
- Exploratory viz (including the difference between exploratory and reporting viz)
- Beyond statistics (i.e. why summary stats shouldn't be the only metrics you look at)



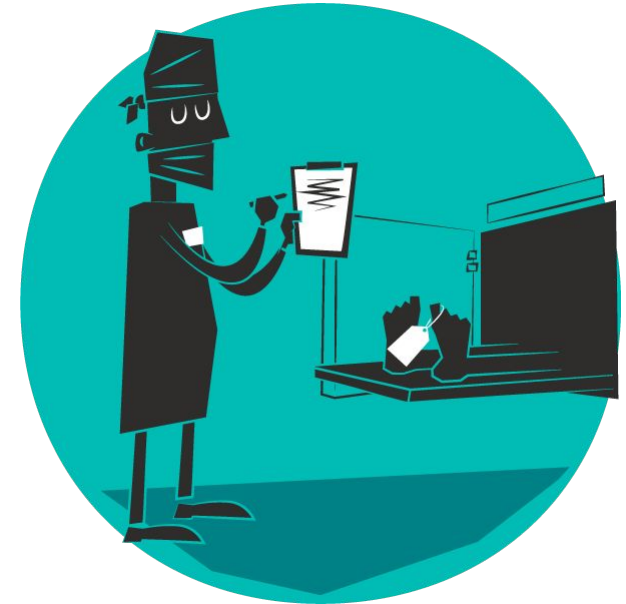
This workshop will help you to understand how to build models and answer questions in a reproducible way and then deliver the results of that work to your target audience.

- Topics covered:
  - Ask
    - What question do you want to answer?
    - What model will help you answer that question?
  - Analyze
    - An introduction to modeling
    - Building dashboards and consumer-ready viz
    - Notebooks and you!
  - Report
    - How to make sure your viz matches your audience
    - Building diversity of outputs into your workflow
    - Data viz best practices (sample - full course teaser)



This workshop will help to guide you through the process of evaluating your team performance and project success.

- **Topics covered:**
  - **Pre-post-mortem questionnaire**
  - **Gathering and using both qualitative and quantitative information**
  - **Include space for subjective input, otherwise it'll be interspersed throughout**
  - **Evaluate:**
    - Team effectiveness
    - Project success
    - Goals met?
    - Stretch goals
    - What worked/didn't
    - Quality of output
    - Auditability



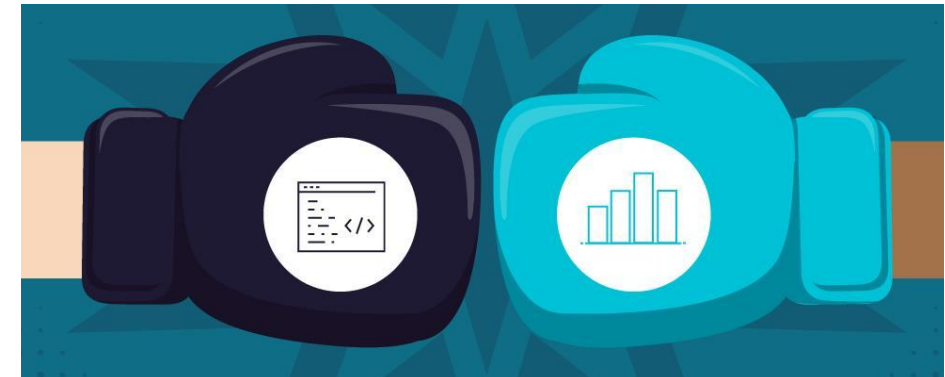
When it comes to data visualization there are many options available. This workshop will compare and contrast many of the popular data visualization tools and why different tools might make sense for different use cases.

- Topics covered:
  - Defining data visualization
  - In Depth Exploration
    - Tableau
    - Power BI
    - Google Data Studio
    - R Studio
    - D3 / Vega / Vega-Lite (ChartBuilder)
  - Other Options
    - Excel
    - Infogram
    - ChartBlocks
    - Datawrapper
    - Plotly
    - RAW
    - Visual.ly
    - Ember Charts
    - NVD3
    - Fusion Charts
    - Highcharts
    - Chart.js
    - ...ad infinitum



Data Scientist is the hottest new job title, and people with many different backgrounds are choosing to pivot their careers to become data practitioners. This workshop will help those coming from a developer background to understand the similarities and differences between computer science / software development and data science.

- Topics covered:
  - Statistics
  - Data processing using code and notebooks
  - Reproducibility
  - Provenance



Too often, many data practitioners dismiss their role in the data ecosystem because they aren't writing code. Talented spreadsheet users, database admins, database admins, and a host of others all have the ability to contribute heavily to the data work within an organization.

This workshop will cover how to be as impactful as possible, even if you aren't a technical user.

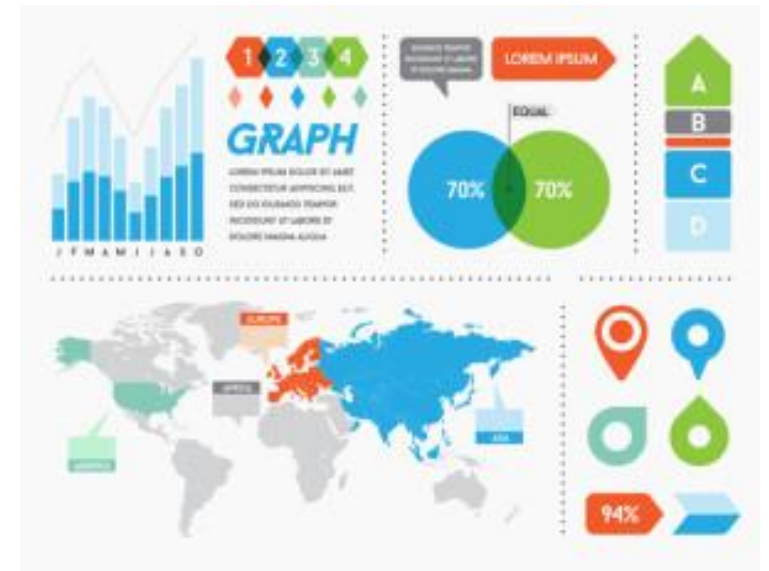
- **Topics covered:**
  - Introduction to queries
  - Formulas and calculations
  - How to deliver/share your data and insights with a team
  - **Tools / Techniques**
    - Spreadsheets
    - ETL
    - (dw)SQL

NO  
CODE

Too often, when we discuss data visualization it is to cover the tactical nature of how to perform a task within a specific piece of software (ex: “how to make a bar chart”). Rarely do we discuss the correct time to use different types of viz, and how to build them using established best practices for the greatest impact.

This workshop will cover the technology-agnostic best practices for visualization design.

- Topics covered:
  - Types of visualizations
  - When to use different families of viz
  - Data as art
  - How to avoid visual clutter
  - Data viz pitfalls



The pervasiveness of data, especially in business decisions, is exploding. Unfortunately many of those who are new to the data ecosystem don't always stop to think about whether just because they can do something doesn't necessarily mean they should. This course will examine the FORTS (Fairness, Openness, Reliability, Trust, and Social Behavior) framework along with establishing the principles for good ethical data work. This work is based on the Global Data Ethics Pledge from Data for Democracy.

- Topics covered:
  - FORTS Framework
    - Fairness
    - Openness
    - Reliability
    - Trust
    - Social Behavior
  - Ethical Principles
    - Consider informed and purposeful intent
    - Make best effort to guarantee security of data
    - Make best effort to protect anonymous data subjects
    - Practice responsible transparency
    - Foster diversity
    - Acknowledge and mitigate unfair bias
    - Hold up datasets with provenance
    - Respect relevant tensions of stakeholders
    - Communicate responsibly
    - Exercise ethical imagination; increase benefit, prevent harm
  - Ethical best practices





# Invited Presentation

edX Project

- Marta Ziosi (AI for People)

- Draft Script: <https://github.com/lfaifai/ai-ethics-training/blob/master/ai-ethics-outline.md>
  - Slack Channel: <https://lfaifoundation.slack.com/archives/C015NJUMR3M>
  - <https://www.edx.org/course/ethics-in-ai-and-big-data>

# LF AI & Data - General Updates

# Welcoming New Members

## Premier

- SAS Institute

## General

- Index Analytics
- ING Bank
- Cloudera
- Precisely
- AlphaBravo
- Broadcom
- Databricks

## Associate

- Aivancity School for Technology, Business & Society
- Open (OpenIntelligence)
- The Shanghai Open Source Information Technology Association
- Peng Cheng Laboratory



# Structure and Governance

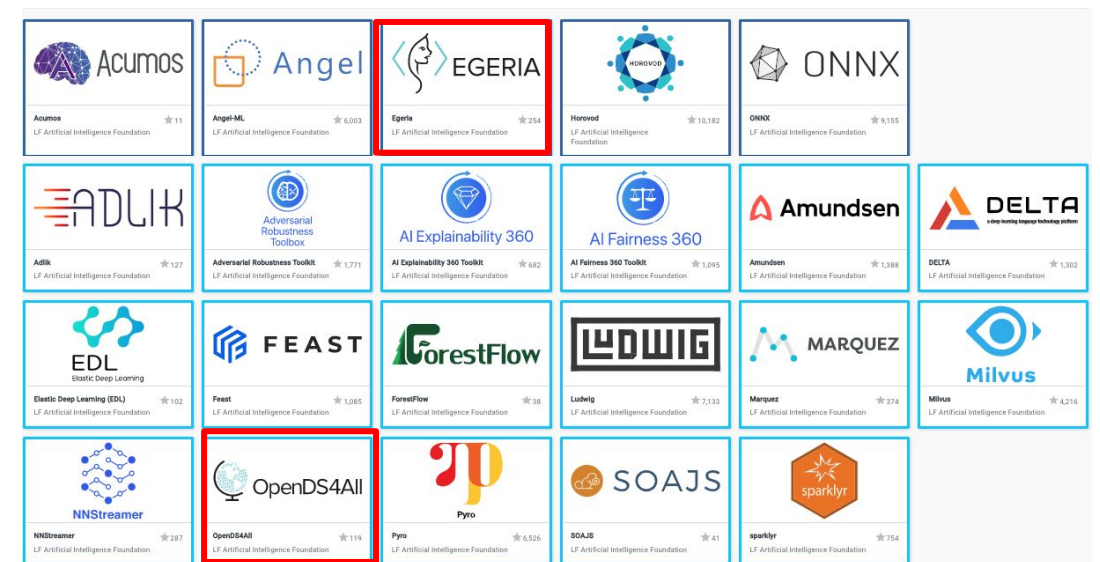
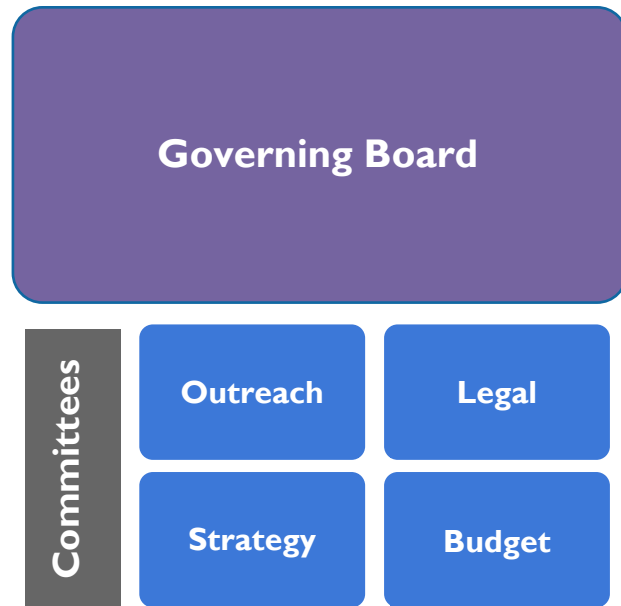
## Foundation Governance

Funding effort to support hosted technical projects

## Technical Coordination, New Initiatives

## Hosted Projects

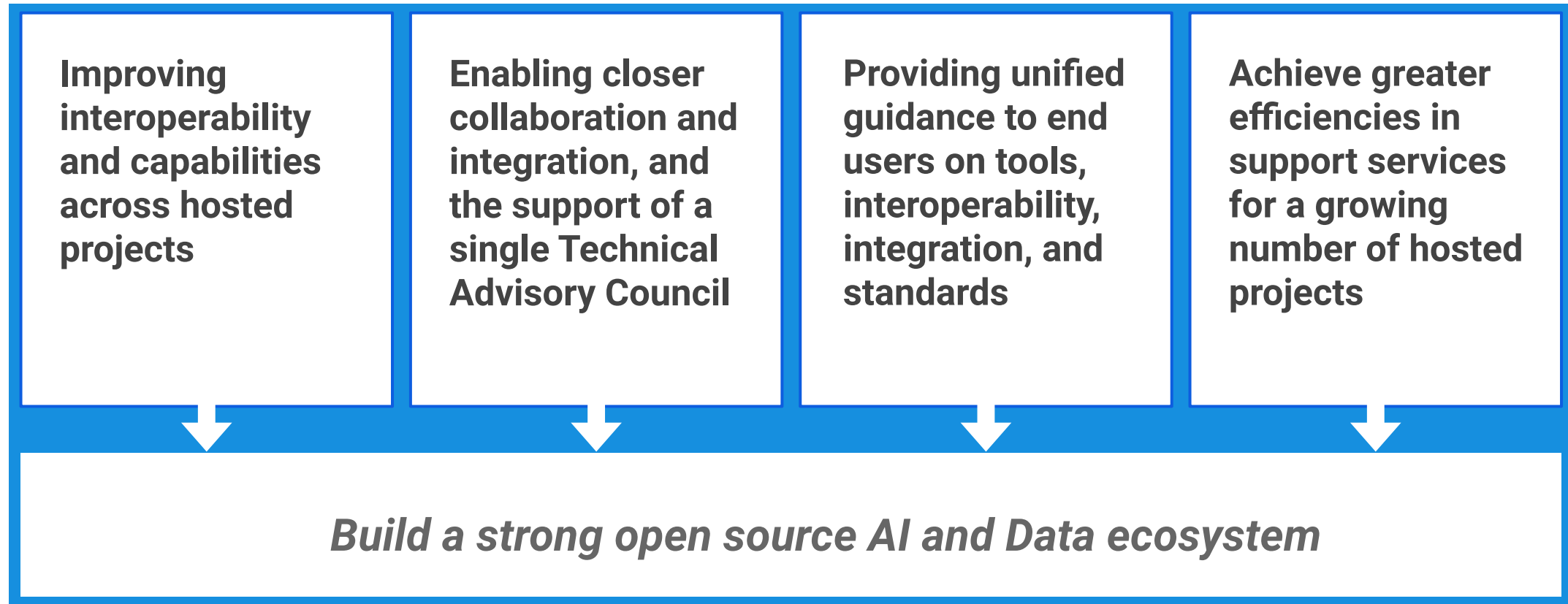
Projects have their own independent technical governance



# Mission

To build and support an open community and a growing ecosystem of open source AI, data and analytics projects, by accelerating innovation, enabling collaboration and the creation of new opportunities for all the members of the community

# Motivations for Harmonization



# LF AI & DATA TIMELINE 2020



Machine Learning	Framework	Platform	Library	Framework	Platform	Library	Tool	Reinforcement Learning	Programming

Notebook Environment	Versioning	Store & Format	Operations	Stream Processing	SQL Engine	Feature Engineering	Visualization	Pipeline Management	Labeling and Annotation	Governance




Model	Benchmarking	Training	Parameter	Format & Interface	Marketplace	Workflow	Inference	Tool	Explainability	Adversarial	Bias & Fairness

Distributed Computing	Computing & Management	Interface	Security & Privacy	Natural Language Processing	Education

The LF AI & Data landscape explores open source projects in Artificial Intelligence and Data and their respective domains.

[l.fai.foundation](https://l.fai.foundation)



Machine Learning	Framework	Platform	Library	Framework	Platform	Library	Tool	Reinforcement Learning	Programming
		 Angel LFAI Graduated	 ForestFlow LFAI Incubating						 Python LFAI Incubating

Notebook Environment	Versioning	Store & Format	Operations	Stream Processing	SQL Engine	Feature Engineering	Visualization	Pipeline Management	Labeling and Annotation	Governance
		 Milvus LFAI Incubating	 Amundsen LFAI Incubating	 FEAST LFAI Incubating	 NStreamr LFAI Incubating					 EGERIA LFAI Graduated

Model	Benchmarking	Training	Parameter	Format & Interface	Marketplace	Workflow	Inference	Tool	Explainability	Adversarial	Bias & Fairness
		 Kubeflow LFAI Graduated	 LUDWIG LFAI Incubating	 ONNX LFAI Graduated	 Acumos LFAI Graduated		 ADLIX LFAI Incubating		 AI Explainability 360 LFAI Incubating	 Adversarial Robustness Toolbox LFAI Incubating	 AI Fairness 360 LFAI Incubating

Distributed Computing	Computing & Management	Interface	Security & Privacy	Natural Language Processing	Education
	 EDL LFAI Incubating	 SOAJS LFAI Incubating	 sparklyr LFAI Incubating	 DELTA LFAI Incubating	 OpenDS4AI LFAI Incubating



The LF AI landscape explores open source projects in the domains of artificial intelligence, machine learning, and deep learning.




















[l.fai.foundation](https://l.fai.foundation)

# A Growing LF AI & Data Project Portfolio and Community

## Graduated LFAI Projects (5)

 <p><b>Acumos</b> LF Artificial Intelligence Foundation</p> <p>★ 11</p>	 <p><b>Angel</b></p> <p><b>Angel-ML</b> LF Artificial Intelligence Foundation</p> <p>★ 6,003</p>	 <p><b>EGERIA</b></p> <p><b>Egeria</b> LF Artificial Intelligence Foundation</p> <p>★ 254</p>	 <p><b>HOROVOD</b></p> <p><b>Horovod</b> LF Artificial Intelligence Foundation</p> <p>★ 10,182</p>	 <p><b>ONNX</b></p> <p><b>ONNX</b> LF Artificial Intelligence Foundation</p> <p>★ 9,155</p>
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## Incubating LFAI Projects (17)

 <p><b>ADLIK</b></p> <p><b>Adlik</b> LF Artificial Intelligence Foundation</p> <p>★ 127</p>	 <p><b>Adversarial Robustness Toolbox</b></p> <p><b>Adversarial Robustness Toolkit</b> LF Artificial Intelligence Foundation</p> <p>★ 1,771</p>	 <p><b>AI Explainability 360</b></p> <p><b>AI Explainability 360 Toolkit</b> LF Artificial Intelligence Foundation</p> <p>★ 682</p>	 <p><b>AI Fairness 360</b></p> <p><b>AI Fairness 360 Toolkit</b> LF Artificial Intelligence Foundation</p> <p>★ 1,095</p>	 <p><b>Amundsen</b></p> <p><b>Amundsen</b> LF Artificial Intelligence Foundation</p> <p>★ 1,388</p>	 <p><b>DELTA</b> a deep learning language technology platform</p> <p><b>DELTA</b> LF Artificial Intelligence Foundation</p> <p>★ 1,302</p>
 <p><b>EDL</b> Elastic Deep Learning</p> <p><b>Elastic Deep Learning (EDL)</b> LF Artificial Intelligence Foundation</p> <p>★ 102</p>	 <p><b>FEAST</b></p> <p><b>Feast</b> LF Artificial Intelligence Foundation</p> <p>★ 1,085</p>	 <p><b>ForestFlow</b></p> <p><b>ForestFlow</b> LF Artificial Intelligence Foundation</p> <p>★ 38</p>	 <p><b>LUDWIG</b></p> <p><b>Ludwig</b> LF Artificial Intelligence Foundation</p> <p>★ 7,133</p>	 <p><b>MARQUEZ</b></p> <p><b>Marquez</b> LF Artificial Intelligence Foundation</p> <p>★ 374</p>	 <p><b>Milvus</b></p> <p><b>Milvus</b> LF Artificial Intelligence Foundation</p> <p>★ 4,216</p>
 <p><b>NNStreamer</b></p> <p><b>NNStreamer</b> LF Artificial Intelligence Foundation</p> <p>★ 287</p>	 <p><b>OpenDS4All</b></p> <p><b>OpenDS4All</b> LF Artificial Intelligence Foundation</p> <p>★ 119</p>	 <p><b>Pyro</b></p> <p><b>Pyro</b> LF Artificial Intelligence Foundation</p> <p>★ 6,526</p>	 <p><b>SOAJS</b></p> <p><b>SOAJS</b> LF Artificial Intelligence Foundation</p> <p>★ 41</p>	 <p><b>sparklyr</b></p> <p><b>sparklyr</b> LF Artificial Intelligence Foundation</p> <p>★ 754</p>	

# Companies hosting projects in LF AI

<https://landscape.lfai.foundation/format=hosting>

amazon

AT&T

Baidu 百度

DiDi

DREAMWORKS

FACEBOOK

Herron Tech

IBM

lyft

Microsoft

gojek

R Studio

SAMSUNG

Tech Mahindra

Tencent 腾讯

Uber

wework

ZILLIZ  
Reinvent Data Science

ZTE

# Looking to host a project with LF AI & Data

- › Hosted project stages and life cycle:

<https://lfai.foundation/project-stages-and-lifecycle/>

- › Offered services for hosted projects:

<https://lfai.foundation/services-for-projects/>

- › Contact:

Jim Spohrer (TAC Chair) and Ibrahim Haddad (ED, LF AI & Data)

# Promoting Upcoming Project Releases

We promote project releases via a blog post and on LF AI & Data [Twitter](#) and/or [LinkedIn](#) social channels

For links to details on upcoming releases for LF AI & Data hosted projects visit the [Technical Project Releases wiki](#)

If you are an LF AI & Data hosted project and would like LF AI & Data to promote your release, reach out to [pr@lfai.foundation](mailto:pr@lfai.foundation) to coordinate in advance (min 2 wks) of your expected release date.

# Note on quorum

As LF AI & Data is growing, we now have 16 voting members on the TAC.

TAC representative - please ensure you attend the bi-weekly calls or email Jacqueline/Ibrahim to designate an alternate representative when you can not make it.

We need to ensure quorum on the calls especially when we have items to vote on.

# Updates from Outreach Committee

# Upcoming Events

- › Upcoming Events
  - › Visit the [LF AI & Data Events Calendar](#) or the [LF AI & Data 2020 Events wiki](#) for a list of all events
  - › To participate visit the [LF AI & Data 2020 Events wiki page](#) or email [info@lfai.foundation](mailto:info@lfai.foundation)
  
- › Please consider holding virtual events

To discuss participation, please email [events@lfai.foundation](mailto:events@lfai.foundation)



# Upcoming Events

**End of the year wrap-up**

**Nov18 - Open Forum Europe - Turning Ethical AI into Technical Reality**

<https://www.openforumeurope.org/event/turning-ethical-ai-into-technical-reality/>

**Just completed**

**China Open Source Conference - Oct 25**

**LF AI Mini Summit at OSS EU – Virtual – Oct 29**

October 29 @ 12:00 am

LF AI Foundation will hold a Mini Summit at Open Source Summit EU (OSS EU)

# LF AI PR/Comms

- › Please follow LF AI & Data on [Twitter](#) & [LinkedIn](#) and help amplify news via your social networks - Please retweet and share!
  - › Also watch for news updates via the tac-general mail list
  - › View recent announcement on the [LF AI & Data Blog](#)
- › Open call to publish project/committee updates or other relevant content on the [LF AI & Data Blog](#)
- › To discuss more details on participation or upcoming announcements, please email [pr@lfai.foundation](mailto:pr@lfai.foundation)

# Call to Participate in Ongoing Efforts

 **OLF** AI & DATA

# Trusted AI

- › **Leadership:**  
Animesh Singh (IBM), Souad Ouali (Orange), and Jeff Cao (Tencent)
- › **Goal:** Create policies, guidelines, tooling and use cases by industry
- › **Github:**  
<https://github.com/lfai/trusted-ai>
- › **Wiki:**  
<https://wiki.lfai.foundation/display/DL/Trusted+AI+Committee>
- › **To participate:**  
<https://lists.lfai.foundation/g/trustedai-committee/>
- › **Next call:** Bi-weekly on Thursdays at 7am PT, subscribe to group calendar on wiki  
<https://wiki.lfai.foundation/pages/viewpage.action?pageId=12091895>
- › **Slack: #trusted-ai-committee**
  - › <https://lfaifoundation.slack.com/archives/CPS6Q1E8G>

# ML Workflow & Interop

- › **Leadership:**  
Huang “Howard” Zhipeng (Huawei)
- › **Goal:**  
Define an ML Workflow and promote cross project integration
- › **Github:**  
TBD
- › **Wiki:**  
<https://wiki.lfai.foundation/display/DL/ML+Workflow+Committee>
- › **To participate:**  
<https://lists.lfai.foundation/g/mlworkflow-committee>
- › **Next call:** Every 4 weeks on Thursdays at 7:00 am PT, subscribe to group calendar on wiki  
<https://wiki.lfai.foundation/pages/viewpage.action?pageId=18481242>
- › **Slack: #ml-workflow**
  - › <https://lfaifoundation.slack.com/archives/C011V9VSMQR>

# BI & AI

- › **Leadership:**

  - Cupid Chan (Index Analytics)

- › **Goal:** Identify and share industry best practices that combine the speed of machine learning with human insights to create a new kind of business intelligence and better strategic directions for organizations.

- › **Github:** <https://github.com/odpi/bi-ai>

- › **Wiki:** TBD

- › **To participate:** (check to see if set up)

  - › <https://lists.lfai.foundation/g/bi-ai-committee/>

- › **Next call:** Monthly community call TBD

- › **Slack:** **#bi-ai-committee**

  - › <https://lfaifoundation.slack.com/archives/C01EK5ND073>

# Launching an effort to create AI Ethics Training

Initial developed course by the LF: Ethics in AI and Big Data - published on edX platform:

<https://www.edx.org/course/ethics-in-ai-and-big-data>

The goal is to build 2 more modules and package all 3 as a professional certificate - a requirement for edX

- › **To participate:**  
<https://lists.lfai.foundation/g/aiethics-training>

# Upcoming TAC Meetings

# Upcoming TAC Meetings

- › **November 19th:** Tentative new incubation project
- › **December 3rd :** RosaNLG & tentative JanusGraph incubation project
- › **December 17th:** Tentative Pyro graduated project proposal and additional new incubation project
- › **December 31st :** No meeting - New Years Eve Holiday
- › **January 14th:** TBD

Please send agenda topic requests to [tac-general@lists.lfai.foundation](mailto:tac-general@lists.lfai.foundation)



# TAC Meeting Details

- › To subscribe to the TAC Group Calendar, visit the wiki: <https://wiki.lfai.foundation/x/XQB2>
- › Join from PC, Mac, Linux, iOS or Android: <https://zoom.us/j/430697670>
- › Or iPhone one-tap:
  - › US: +16465588656,,430697670# or +16699006833,,430697670#
- › Or Telephone:
  - › Dial(for higher quality, dial a number based on your current location):
  - › US: +1 646 558 8656 or +1 669 900 6833 or +1 855 880 1246 (Toll Free) or +1 877 369 0926 (Toll Free)
- › Meeting ID: 430 697 670
- › International numbers available: <https://zoom.us/u/achYtcw7uN>

# Open Discussion

# Mission

To build and support an open community and a growing ecosystem of open source AI, data and analytics projects, by accelerating innovation, enabling collaboration and the creation of new opportunities for all the members of the community

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# Project Contribution Proposal - Name

# Project Contribution Proposal Review & Discussion: Project\_Name

Project\_Description.

**Presenter:** Name

**Resources:**

Github: ABC

Project Level: Incubation

Proposal: XYZ



# TAC Vote on Project Proposal: Project\_Name

## **Proposed Resolution:**

The TAC approves the Project\_Name as an Incubation project of the LF AI & Data Foundation

# Next Steps

## Onboard & Announcement:

LF AI & Data staff will work with Project\_Name to onboard the project (e.g., Website, Logo, Foundation, Mailing List, Calendar, Zoom, Wiki, Slack, Repo, Presentations, etc.) leading to the announcement of the project joining LF AI & Data

## Collaboration:

Explore potential integrations between the project and other LF AI & Data projects

## Operations:

Integrate the project with LF AI & Data operations