

Technical Advisory Council Meeting

February 13, 2020

 THE **LINUX** FOUNDATION

 **LF AI**

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Recording of Calls

This is a reminder that TAC calls are recorded and available for viewing on the [TAC Wiki](#)

Reminder: LF AI Useful Links

Web site: lfai.foundation
Wiki: wiki.lfai.foundation
GitHub: github.com/lfai
Landscape: landscape.lfai.foundation or 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

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
- Approval of Minutes
- ITU Global Challenge on AI/ML in 5G Networks
- Invited Talk: CD.Foundation on MLOps Work
- LF AI Updates
 - New Members
 - Project Updates
 - Outreach Committee
 - Ongoing Efforts by Other Committees
- Upcoming TAC Meetings
- Open Discussion

TAC Voting Members

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Acumos AI Project	Anwar Aftab	anwar@research.att.com
Angel Project	Fitz Wang	fitzwang@tencent.com
ONNX Project	Prasanth Pulavarthi	prasanth.pulavarthi@microsoft.com

* TAC Chairperson

Approval of Minutes

- › Draft minutes from the January 16th meeting of the TAC were previously distributed to the TAC members
- › **Proposed Resolution:**
 - › That the minutes of the January 16th meeting of the Technical Advisory Council of the LF AI Foundation are hereby approved

ITU Global Challenge on AI/ML in 5G Networks

Vishnu Ram
vishnu.n@ieee.org

ITU ML5G Challenge

Applying AI/ML in 5G networks

[Presentation to Linux Foundation AI: 13-Feb-2020: TAC]

Contact: Vishnu Ram

vishnu.n@ieee.org , ai5gchallenge@itu.int

Source: ITU FG ML5G

<https://www.itu.int/en/ITU-T/focusgroups/ml5g/Pages/default.aspx>



Agenda

- Rewind and update after 15-Aug-2019
- ITU ML5G challenge summary
- Potential collaboration opportunities with LF AI

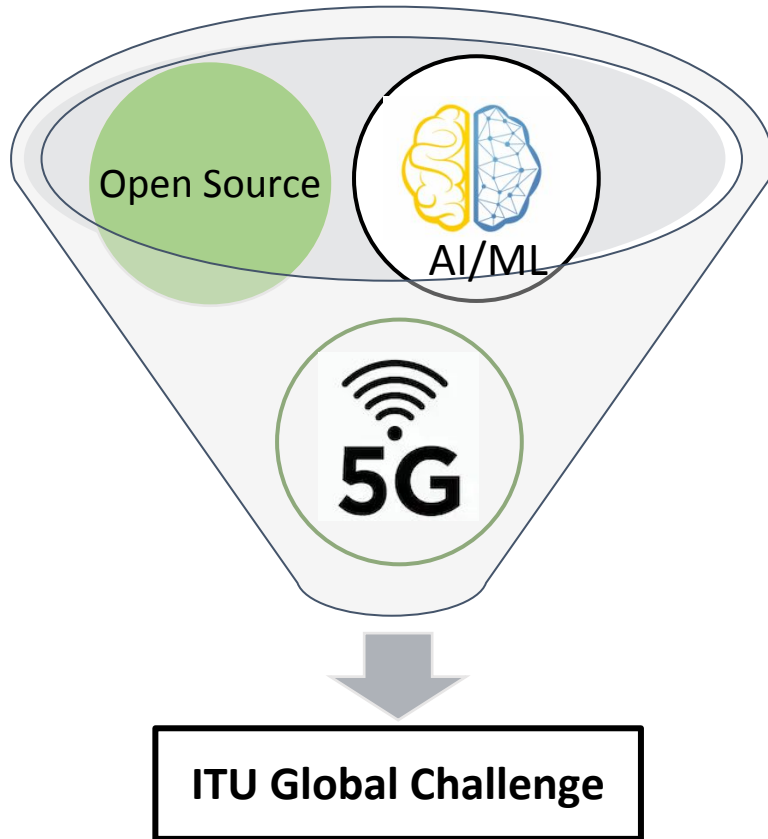


Updates after TAC presentation on 15-Aug-2019

- Published Supplement 55 to Y.3170-series: Y.ML-IMT2020-Use-Cases “Machine learning in future networks including IMT-2020: use cases” (<https://www.itu.int/rec/T-REC-Y.Sup55-201910-I/en>)
- Published ITU-T Y.3172 (<https://www.itu.int/rec/T-REC-Y.3172/en>)
- Approved : ITU-T Y.3173 “Framework for evaluating intelligence levels of future networks including IMT-2020”
- Approved : ITU-T Y.3174 “Framework for data handling to enable machine learning in future networks including IMT-2020”
- Draft Recommendation Y.ML-IMT2020-MP in SG13: ML marketplace integration in future networks including IMT-2020
- Ongoing work: Optimization and deployment framework for ML models
<https://extranet.itu.int/sites/itu-t/focusgroups/ML5G/input/ML5G-I-171-R1.docx>
- Ongoing work: Requirements, architecture and design for machine learning function orchestrator
<https://extranet.itu.int/sites/itu-t/focusgroups/ML5G/input/ML5G-I-216.docx>
- ITU ML5G Challenge in AI/ML**
<https://extranet.itu.int/sites/itu-t/focusgroups/ML5G/input/ML5G-I-217-R1.docx>



ITU ML5G Challenge: AIMs and Objectives



- ❖ Bring together network operators, network manufactures and academia
- ❖ Innovate and solve 5G problems with AI/ML
- ❖ Apply ITU's AI architecture in 5G

Technical Track	Real Data ("secure track")	Open Data	Synthetic Data	No Data
Network	✓	✓	✓	
Verticals	✓	✓	✓	
Enablers				✓
Social good	✓	✓	✓	✓

* Secure data handling practices (sandboxes for Real anonymized network data)



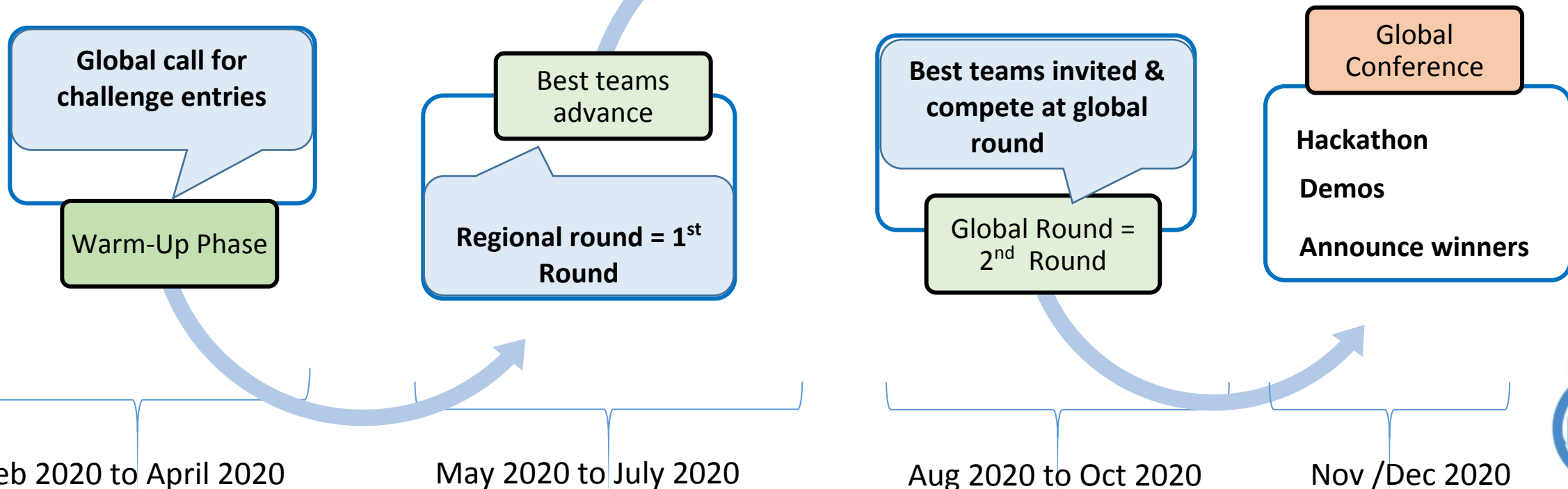
ITU ML5G Challenge: Participation and Timelines

Students

Students need to be registered as students at a university when they sign up for the ITU ML5G Challenge.

Professionals

Anyone else is considered a “professional”. A person who has the necessary skills to complete the problem sets they choose to tackle in the Challenge



ITU ML5G Challenge: Potential collaboration opportunities

Proposal-1: Co-branding, Joint messaging and promotion, Joint analysis of use cases, identify ML solutions/models/datasets which fits a solution.

Example of expected feedback: “yes, this looks interesting and my organization has seen similar problems”, “yes, we have similar models in our marketplace”, “yes, there are optimization tools which can work with such models”.

Proposal-2: Collaborate on contributions to open source, hosting platforms.

Proposal-3: Swap notes on funding opportunities, sponsors, hosts, joint conference opportunities [*sponsor package can be discussed separately*].

Next step: Open a channel for coordinating the above and follow ups with ITU.

Please send participation interest to vishnu.n@ieee.org ,

ai5gchallenge@itu.int



Interested in Participating?

If you or your organization would like to participate along LF AI, please email info@lfai.foundation to discuss.

Please submit your interest by February 21st so that we may consolidate our LF AI participation intent.

CD.Foundation on MLOps Work

Animesh Singh, singhan@us.ibm.com

Terry Cox, terry@bootstrap.je

MLOps Sig

Animesh Singh
MLOps Sig Chair



CD.FOUNDATION

sig-mlops

<https://github.com/cdfoundation/sig-mlops>

<https://cd.foundation/blog/2020/02/11/announcing-the-cd-foundation-mlops-sig/>



CD.FOUNDATION

Enterprise Machine Learning



ginablaber

@ginablaber

Follow



The story of enterprise Machine Learning: “It took me 3 weeks to develop the model. It’s been >11 months, and it’s still not deployed.”

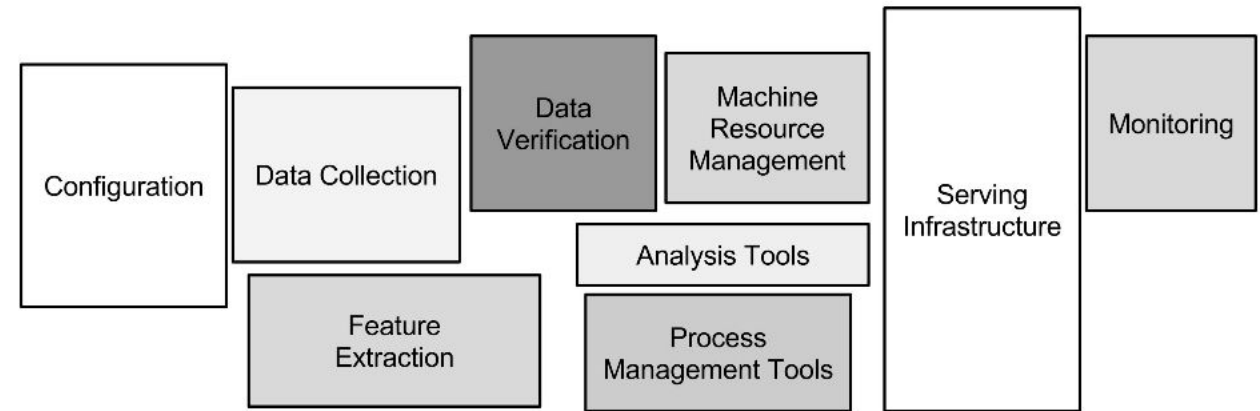
[@DineshNirmalIBM](#) [#StrataData](#) [#strataconf](#)

10:19 AM - 7 Mar 2018

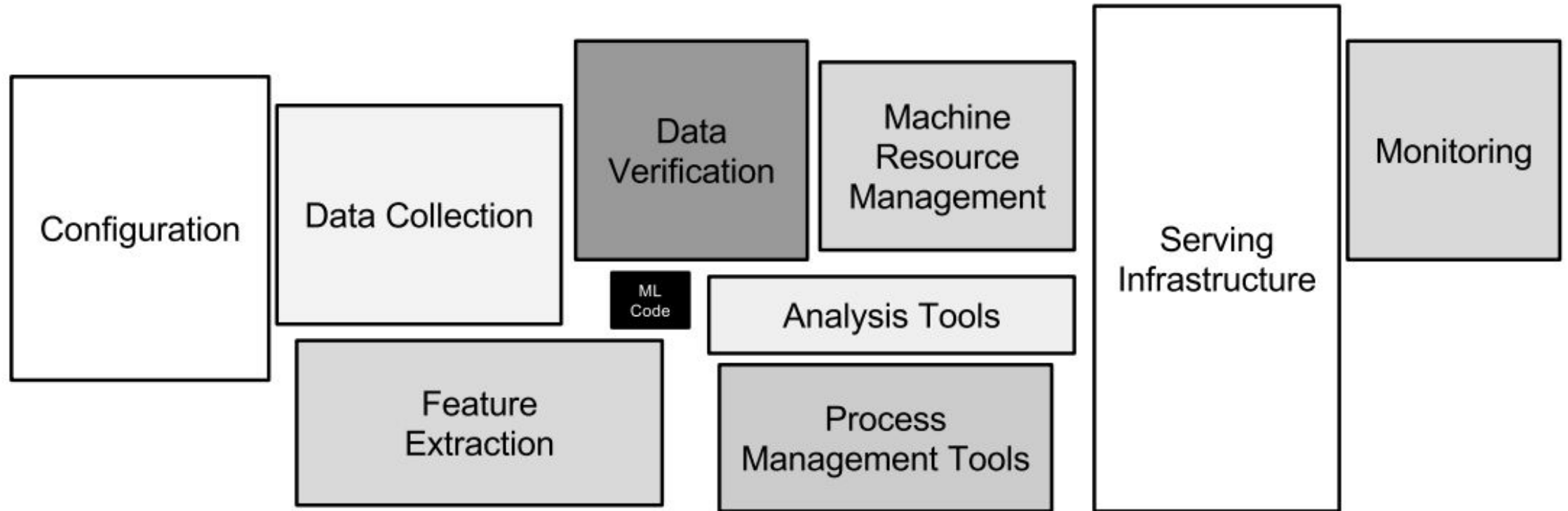


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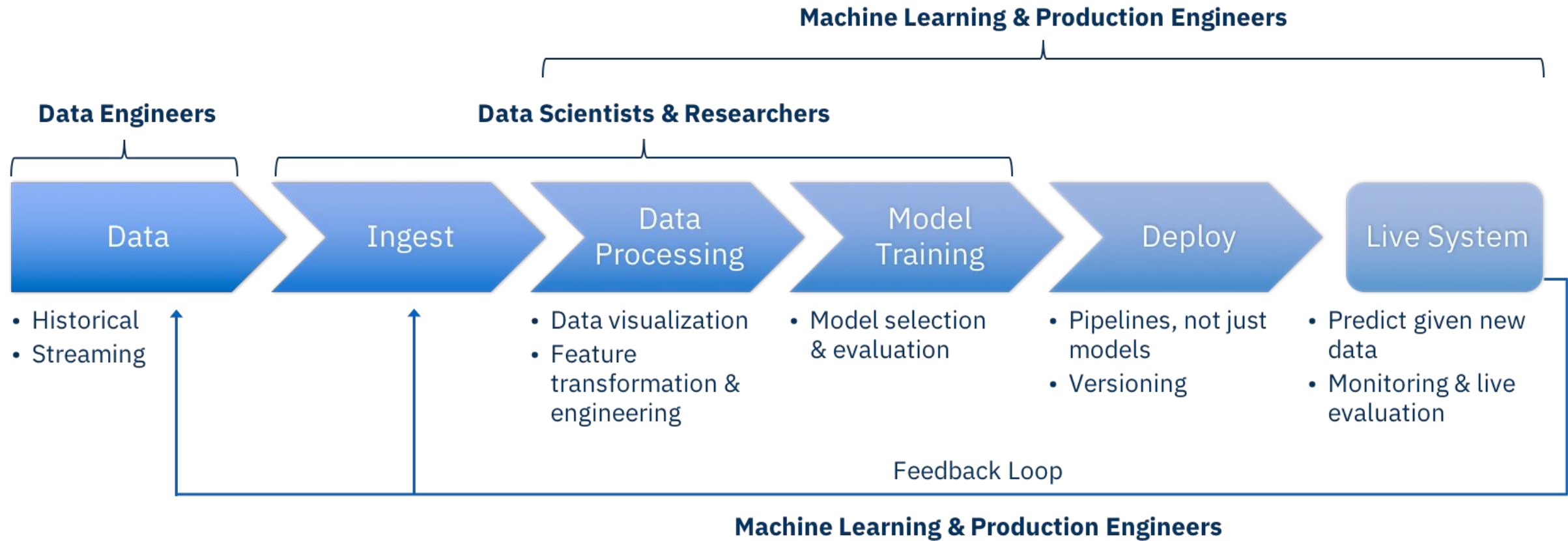
ML Code



In reality...ML Code is tiny part in this overall platform



And the ML Lifecycle spans teams ...



Announcing: MLOps SIG

With the high level goal of bringing best practices around DevOps into Machine Learning ecosystem, MLOps Sig has been formed.

MLOps Definition and Roadmap: Create vision and roadmap for MLOps, what it means, and how do we envision its role within the CI/CD ecosystem. Terry Cox, a co-leader in SIG has done an excellent job of compiling a draft vision and roadmap for this

Reference Architecture and Design Patterns:: Create reference architecture, design patterns and implementations and processes for MLOps. A use case is integration between MLOps Pipelines and Tekton e.g. Kubeflow Pipelines working with Tekton as a backend. The SIG has already delivered significant results and has kicked off a project in to start enabling some of these capabilities on top of Tekton. Some of the artifacts which have been produced are listed here:

- [Argo and Tekton Comparison](#)
- [Argo-Tekton Yaml for Flip Coin](#)
- [KFP Compiler for basic sequential pipeline in Tekton](#)
- [Kubeflow Pipelines-TFX Pipelines](#)



AI Governance and Risk Management: Define architecture and guidelines around lineage tracking, metadata collection, experiment tracking, data versioning, ETL operations, etc. which a typical Data and ML Pipeline shall support to enable Ethical AI

MLOps Roadmap Overview

Terry Cox, MLOps SIG Roadmap Lead



CD.FOUNDATION

What is MLOps?

We define **MLOps** as:

"The extension of the DevOps methodology to include Machine Learning and Data Science assets as first class citizens within the DevOps ecology."

Why have a roadmap?

- ML undertakings are assets that need to be deployed within software products
- Existing approaches and tools lack appropriate consideration for ML needs
- Decision-making systems require high quality governance processes
- New Data Science teams may lack exposure to SDLC best known methods
- Collaborative approach to codifying best known methods is preferred

Goals for the roadmap

- Elicit and communicate requirements across broad community
- Extend DevOps principles to cover ML-specific challenges
- Provide focus for pre-competitive collaboration on shared solutions
- Present a 5-year vision for required future capabilities
- Refresh the roadmap annually

Structure of the roadmap

- Identify **Challenges** within the problem domain
- Identify specific **Technology Requirements** to enable progress against the challenges
- Propose **Potential Solutions** that could address the challenges above and meet technical requirements
- Manage **Cross-Cutting Concerns** that impact other streams of work within CDF

Contributing to the roadmap

Draft roadmap for 2020 is here:

<https://github.com/cdfoundation/sig-mlops/tree/master/roadmap/2020>

Contributions welcomed via PR.

SIG meetings held fortnightly, with on-going discussion via Slack

<https://github.com/cdfoundation/sig-mlops>



LF AI Updates

New Members

New Members

Premier



General



Associate



Outreach Committee

Recent Announcements

1. **New Member Welcome - RStudio + inwinSTACK + ISSIP:**
<https://lfai.foundation/blog/2020/01/30/lf-ai-foundation-new-member-welcome-rstudio-inwinstack-issip/>
2. **Sparklyr New Project:**
<https://lfai.foundation/blog/2020/01/29/sparklyr-joins-lf-ai-as-its-newest-incubation-project/>
3. **LF AI 2019 Year in Review:**
<https://lfai.foundation/blog/2020/01/22/lf-ai-2019-year-in-review/>
4. **Horovod 0.19.0 Release:**
<https://lfai.foundation/blog/2020/01/14/horovod-version-0-19-0-now-available/>
5. **Angel Graduation:**
<https://lfai.foundation/blog/2019/12/19/lf-ai-foundation-announces-graduation-of-angel-project/>
6. **Zilliz new premier member:**
<https://lfai.foundation/blog/2019/12/17/lf-ai-welcomes-zilliz/>
7. **LF AI Day Shanghai Summary:**
<https://lfai.foundation/blog/2019/12/05/thank-you-lf-ai-day-shanghai-summary/>
8. **LF AI Receives Contribution Award from CAAI:**
<https://lfai.foundation/blog/2019/11/27/lf-ai-receives-best-contribution-award/>
9. **Acumos Clio Release:**
<https://lfai.foundation/press-release/2019/11/26/lf-ai-delivers-acumos-ai-clio-release/>
10. **Pyro 1.0.0 Release:** <https://lfai.foundation/blog/2019/11/18/pyro-1-0-has-arrived/>

Upcoming Announcements

February:

Acumos and Angel Collaboration
Marquez New Project
Milvus New Project

March:

Angel Roadmap + Project Participation Invite

LF AI Events

Event Leads Needed - Please Encourage Member Participation Across Your Organizations

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>

2020 Events Wiki:

<https://wiki.lfai.foundation/display/DL/2020+Events>

The [Outreach Committee](#) and LF AI Community need to identify Event Leads to drive these events as the Foundation is not resources/budgeted to manage them all. Please encourage participation within your organizations. LF AI provides [event planning templates/resources](#) and is available to help with guidance and questions along the way. Please email the Jessica Kim (Outreach Committee Chair) or Jacqueline/Ibrahim to discuss participation.

Call to Participate in Ongoing Efforts

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>

ML Workflow

- › **Leadership:**
Ofer Hermoni
- › **Goal:**
Define an ML Workflow and promote cross project integration
- › **Wiki:**
<https://wiki.lfai.foundation/display/DL/ML+Workflow+Committee>
- › **To participate:**
<https://lists.lfai.foundation/g/mlworkflow-committee>
- › **Next call:** Bi-weekly on Thursdays at 7:00 am PT, subscribe to group calendar on wiki
<https://wiki.lfai.foundation/pages/viewpage.action?pageId=18481242>

Upcoming TAC Meetings

Upcoming TAC Meetings

February 27: Invited Talk by CodeReef (<https://codereef.ai/>)

March 12: Incubation Project Proposal + TAC Vote: NNStreamer from Samsung

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

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