How Linux Foundation is Changing the (Machine-Learning) World

Ofer Hermoni, Ph.D.
Director of Product Strategy, CTO Office, Amdocs
Chairperson, LFAI Technical Advisory Council

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LFAI mission

Build and support an open AI community, and drive open source innovation in the AI, ML and DL domains by enabling collaboration and the creation of new opportunities for all the members of the community
LFAI goals

Neutral Environment

Provide a neutral environment and an open governance that fosters collaboration and cross-pollination.

Harmonization, Interoperability

Increase efforts to harmonize open source projects and reduce fragmentation; increase the interoperability among projects.

Ethics and Fairness

Become the home of open source AI efforts in ethics and fairness, and an advocate for these principles.

Data, Models Tools and Marketplace

Host open source AI models with supporting tools; publish best practices; offer a marketplace for machine learning Models.

Funding and Awareness

Provide a funding model for key projects; increase awareness of LFAI projects.
LFAI structure

Governing Board

Outreach  Legal  Budget

Strategy  Fairness

Project Coordination

Technical Advisory Council (TAC)

Governance

Technical Projects

Acumos  EDL  Angel  Horovod  Pyro

Developer Community  Developer Community  Developer Community  Developer Community  Developer Community
Membership

**Premier**
- amdocs
- AT&T
- Baidu
- Ericsson
- HUAWEI
- NOKIA
- Tech Mahindra
- Tencent
- ZTE

**General**
- B-Yond
- Ciena
- DiDi
- IBM
- opencloud
- orange
- redhat
- Sylabs.io

**Associate**
Major milestones

### 2018

- **LFDL launches**
  - 3: **LFDL welcomes Acumos AI, first project**
  - 5: Acumos Challenge
  - 7: Acumos AI Day France
  - 8: Acumos AI Day NYC
  - 11: Landscape launched
  - 12: LFDL welcomes Horovod

### 2019

- **Mission**
  - 1: LFDL welcomes Angel ML and EDL projects
  - 3: LFDL welcomes Pyro
  - 5: LFDL becomes LFAI
  - 8: LFAI day
LFAI project maturities

- Incubation: TAC vote
- Graduation: TAC + GB votes
- Emeritus: TAC + GB votes
Projects

We would like to build a complete AI stack with LFAI projects that are tightly integrated.
Acumos AI

GitHub: https://github.com/acumos
7K+ commits, 89 contributors
License: Apache-2.0

Description:
Acumos AI is a distributed marketplace for ML models, that makes it easy to build, share, and deploy AI apps. Acumos standardizes the infrastructure stack and components required to run an out-of-the-box general AI environment. This frees data scientists and model trainers to focus on their core competencies and accelerates innovation.
Angel

GitHub: https://github.com/Angel-ML/angel
>2K commits, 57 contributors
4K+ stars
License: Apache-2.0
Description:
Angel is a high-performance distributed machine-learning platform based on Parameter Server, running on YARN and Apache Spark. It is tuned for performance with big data/model and has a wide range of applicability and stability, demonstrating increasing advantage in handling higher dimension model. Angel supports big and complex models with billions of parameters
EDL – Elastic Deep Learning

GitHub: https://github.com/paddlepaddle/edl
~1,000 commits, 25 contributors
License: Apache-2.0

Description:
EDL is an Elastic Deep Learning framework designed to help Deep Learning Cloud Service providers to build cluster cloud services using different deep learning frameworks
Horovod

GitHub: https://github.com/horovod/horovod
>300 commits, 54 contributors
>7K stars
License: Apache-2.0

Description:
Horovod is a distributed training framework for TensorFlow, Keras, PyTorch, and MXNet. The goal of Horovod is to make distributed Deep Learning fast and easy to use
Pyro

GitHub: https://github.com/pyro-ppl/pyro

>1,600 commits, 68 contributors

5,555 stars

License: Apache-2.0

Description:

Pyro is a flexible, scalable deep probabilistic programming library built on PyTorch
LFAI Machine Learning Stack

Data Governance
- Data cleansing
- Data ingestion
- Data analysis
- Data transformation
- Data validation
- Data splitting

Ethics Management
- Building a model
- Training optimization
- Model validation
- Training at scale

Security Management
- Deploying
- Serving
- Monitoring & Logging
- Finetune & improvements

Data flow and Workflow Orchestration
- Data ingestion
- Data analysis
- Data transformation
- Data validation
- Data splitting

Marketplace (AI Hub)
- Model creation
- Rollout
- Deploying
- Serving
- Monitoring & Logging
- Finetune & improvements

Dataflow and Workflow Orchestration
- Model
- Training at scale
- Training optimization
- Model validation
- Building a model

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Open Source Machine Learning Stack

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Data
- Hadoop

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- Model

Data prep
- Data prep

Model creation
- Model creation

Rollout
- Rollout

Security Management
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Dataflow and Workflow Orchestration
- Marketplace (AI Hub)
- AIF 360
- Angel
- Adversarial-robustness-toolbox
- Kubeflow
- Tensorflow
- Mlflow
- MAX
- Adversarial-robustness-toolbox
Thanks You

ofer.hermoni@amdocs.com

info@lfai.foundation

https://lfai.foundation
https://l.lfai.foundation
https://wiki.lfai.foundation/
https://github.com/lfai
https://lfai.foundation