

Federated ML application at edge R4 Release Notes

Release Notes for the <Federated ML Blue Print>I

- Summary

This document provides the release note for federated ml applications at edge.

what is released

components of the release (Akraino new)

- Refactored Hetero FTL with optional communication-efficiency mechanism, with 4x time efficiency improvement
- Hetero SecureBoost supports complete secure mode
- Hetero SecureBoost now can reduce time consumption over highly sparse data by using sparse matrix computation on histogram aggregations.
- Hetero SecureBoost optimization: the communication round in prediction is reduced to no larger than tree depth, prediction speed is improved by 32 times in a 100-tree model.
- Addition of Hetero FastSecureBoost module, whose mixed/layered modeling method makes it twice as efficient as SecureBoost
- Improved Hetero Federated Binning with 30%~50% time efficiency improvement
- Better GLM: >10% improvement in time efficiency
- FATE first unsupervised learning algorithm: Hetero KMeans
- Upgraded Hetero Feature Selection: add PSI filter and SecureBoost feature importance filter
- Add Data Split module: splitting data into train, validate, and test sets inside FATE modeling workflow
- Add DataStatistic module: compute min/max, mean, median, skewness, kurtosis, coefficient of variance, percentile, etc.
- Add PSI module for computing population stability index
- Add Homo OneHot module for one-hot encoding in homogeneous scenario
- Evaluation module adds metrics for clustering
- Optional FedProx mechanism for Homo LR, useful for training with non-iid data
- Add Oblivious Transfer Protocol and OT-based module Secure Information Retrieval
- Random Iterative Affine protocol, providing additional security

dependencies of the release (upstream version, patches)

still the same

differences from previous version

add several new modules in FATE

accelerate the computing for hetero, horizontal, and feature binning method

- Upgrade Procedures

- N/A

- Release Data

- Module version changes

- 1.5.0

- Document Version Changes

- N/A

- Software Deliverable

- Software is available in the ai edge repo: <https://gerrit.akraino.org/r/admin/repos/aiedge>

- Documentation Deliverable

- [Federated ML application at edge R4 API Document](#)

- [Federated ML application at edge R4 Installation Document](#)

- [Federated ML application at edge R4 Test Document](#)

- [Federated ML application at edge R4 Architecture Document](#)

- Fixed Issues and Bugs

- N/A

- Enhancements

- N/A

- Version change

- Deliverable

- Known Limitations, Issues and Workarounds

- System Limitations

- Known Issues

- N/A

- Workarounds

- N/A
- References
 - [FATE release logs](#)