Applying privacy enhancing technologies to alternative credit scoring

Keywords:
- Fintech, federated learning, machine learning, alternative credit scoring, privacy-enhancing technologies, and homomorphic encryption

Problems addressed

- To facilitate sharing of insights from alternative data between banks and data partners while complying with the requirements of the privacy regulations in Hong Kong
- To develop alternative credit scoring models using federated learning
- To verify the performance of the alternative credit scoring models and monitor the privacy control during the process of federated learning

To address the above, ASTRI developed a software platform supports the deployment of advanced model frameworks, privacy protection based on different privacy enhancing technologies, functions for evaluating privacy control and performance of the models, and integration with the infrastructure of the HKMA for managing credit data shared by data partners and banks.
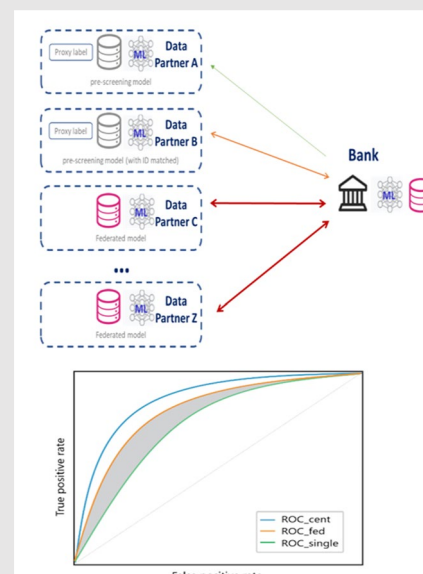
Innovations

The privacy enhancing platform can support sharing of machine learning model information among data partners and address the concerns of data privacy. The innovation also includes the following:

- Innovative model frameworks for credit scoring based on federated learning
- Algorithmic support for privacy enhancement
- Performance evaluation and privacy control for the model frameworks

Key impact

- Empower banks to apply federated machine learning on the alternative data of their strategic data partners
- Explore new alternative credit models to help SMEs get financing
- Allow different service providers to leverage their data to create new business models based on federated learning
- Facilitate the data sharing for fintech applications in the ecosystem

Innovation snapshot

Project completed
- 2022

Applications
- Federated machine learning

Patent(s)
- US App. No. 17/344,893;
  CN App. No. 202180001789.0 and
  HK App. No. 62022045702.7

ASTRI Patent Search

Commercialisation opportunities
- IP licensing
- Technology co-development