Towards Scalable, Efficient and Privacy Preserving Machine Learning
Rania Talbi, Sara Bouchenak

To cite this version:
Rania Talbi, Sara Bouchenak. Towards Scalable, Efficient and Privacy Preserving Machine Learning, Middleware ’18 Doctoral Symposium, Dec 2018, Rennes, France. <hal-01956155>

HAL Id: hal-01956155
https://hal.archives-ouvertes.fr/hal-01956155
Submitted on 14 Dec 2018

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L’archive ouverte pluridisciplinaire HAL, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d’enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.
Objectives

- Minimize the computational costs incurred by privacy preservation.
- Provide an end-to-end privacy preserving outsourced data classification service.
- Enable a set of mutually untrusted data owners to have a global vision on the union of their data without breaching the privacy of each one of them.
- Enable dynamic data model updates when new training data samples are available.

Related work

Different ML algorithms

- Clustering
- Association
- Classification

Different privacy-preserving objectives

- ML output protection
- Data protection
- Privacy preservation

Privacy Preservation techniques

- Cryptographic techniques
- Non-cryptographic techniques

Design principles

- Decent privacy and utility levels
- Efficient runtime
- Entirely outsourced ML
- Combinatorially encrypted data

References