University at Buffalo
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Homepage

Research category: A) Theory, B) AI/ML

Research area: Algorithms, Computational Geometry, Machine Learning, Differential Privacy, and Geometric Computing in Biomedicine, Networking, and Deep Learning
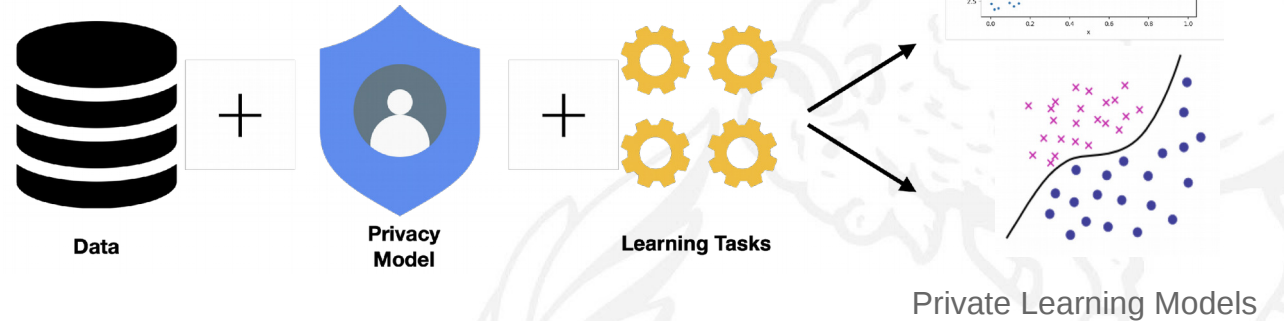
Research applications: Biomedical Data Analysis, Privacy Preserving, Trustworthy AI
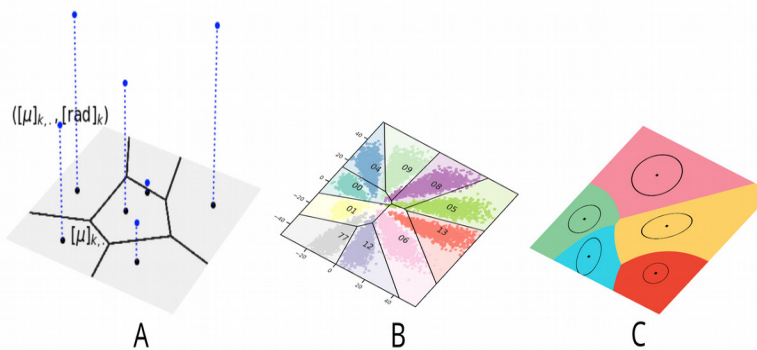
Selected research projects:

NSF: Novel Geometric Algorithms for Learning from Big Biomedical Data

CRG: Modern Privacy-preserving Learning Algorithms for Biomedical Data
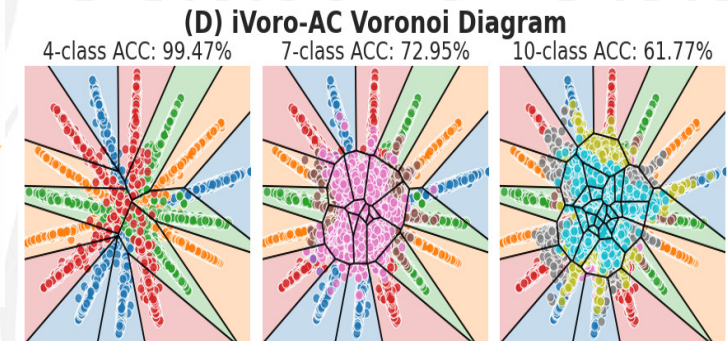
● Differentially Private Machine Learning

Data   Privacy Model   Learning Tasks

Private Learning Models

● Geometric View of Deep Learning

● Geometry Enhanced Deep Learning Models

Deep Neural Networks form Power Diagrams in feature space

(D) iVoro-AC Voronoi Diagram
4-class ACC: 99.47%   7-class ACC: 72.95%   10-class ACC: 61.77%

Geometric techniques significantly improve continuous deep learning models

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