UVA | SCHOOL of DATA SCIENCE

Overview of Federated Learning

Distributed Computing
School of Data Science
University of Virginia

Agenda

> Federated Learning (FL) Background

> Federated Averaging (FedAvg)

> FL in Production

> Non-IID Data

> Differential Privacy

> Other Considerations and Challenges

FL Background

Decentralized vs Distributed Data

Decentralized
- Data is spread across machines
- No single entity controls all data
- **No single entity sees all data**
- Nodes can have their own policies and permissions

Distributed
- Data is spread across machines
- **System has central authority**