Future Directions

🚀 Vertical FL

Different features from different institutions

🧬 Genomic FL

Privacy-preserving genetic research

🤖 LLM Fine-tuning

Federated adaptation of medical LLMs

⚡ Split Learning

Hybrid FL + split computation

🗺️ Research Opportunities

Communication efficiency • Adaptive aggregation • Cross-silo heterogeneity • Byzantine robustness • Incentive mechanisms • Real-world deployments