

Personalized Federated Framework for OMOP-CDM Multi-Hospital Data

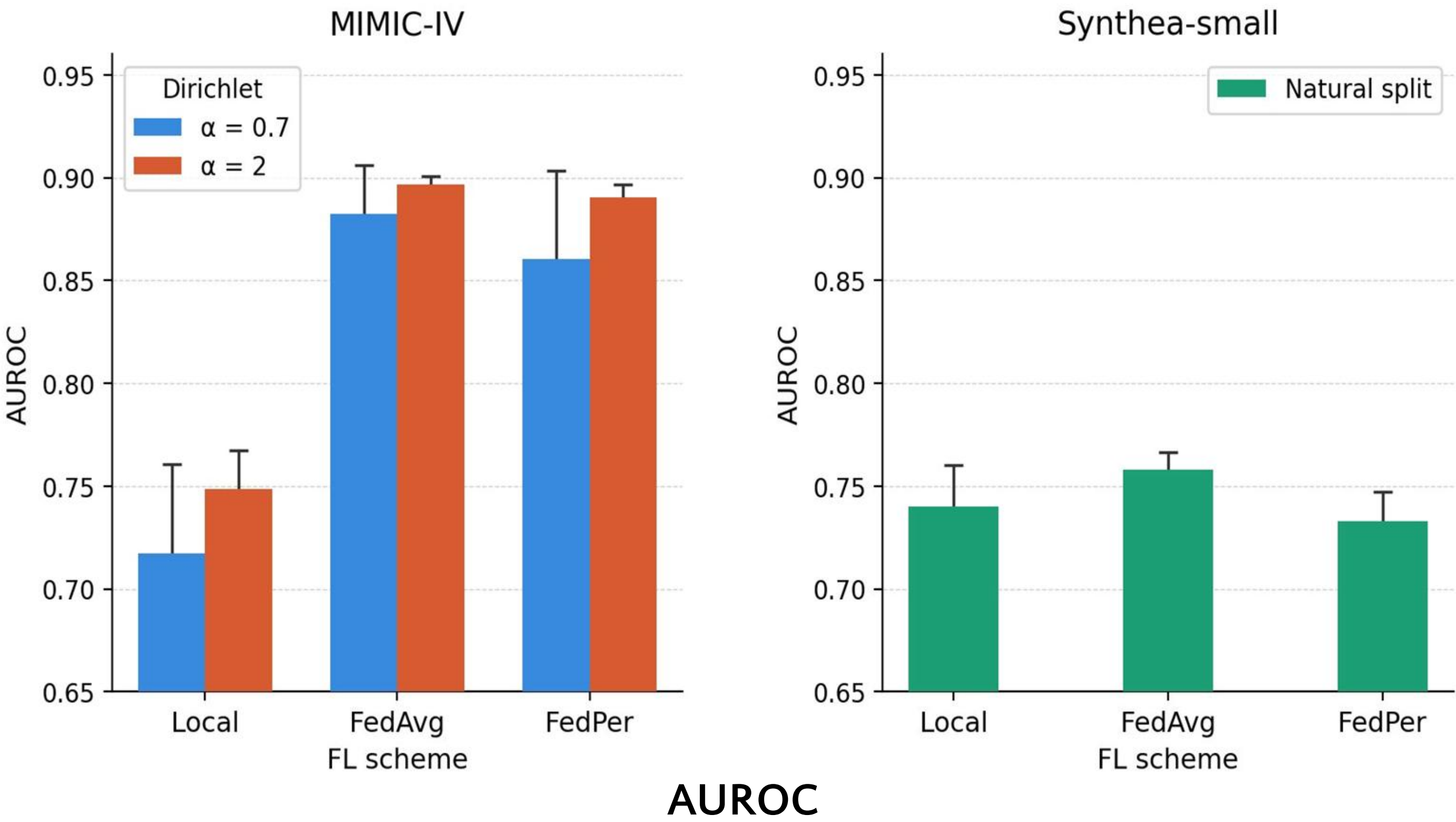
Application to prediction of 30-day hospital readmission

Background: OMOP-CDM standardizes observational health data across institutions, but privacy laws (GDPR) prevent centralized pooling. Existing FL frameworks require consortium-wide agreement on ML pipelines, overlooking client-specific needs. Our key innovation is dynamic runtime configuration: each hospital maintains its own model architecture and feature pipeline while participating in standardized, containerized, privacy-preserving distributed training.

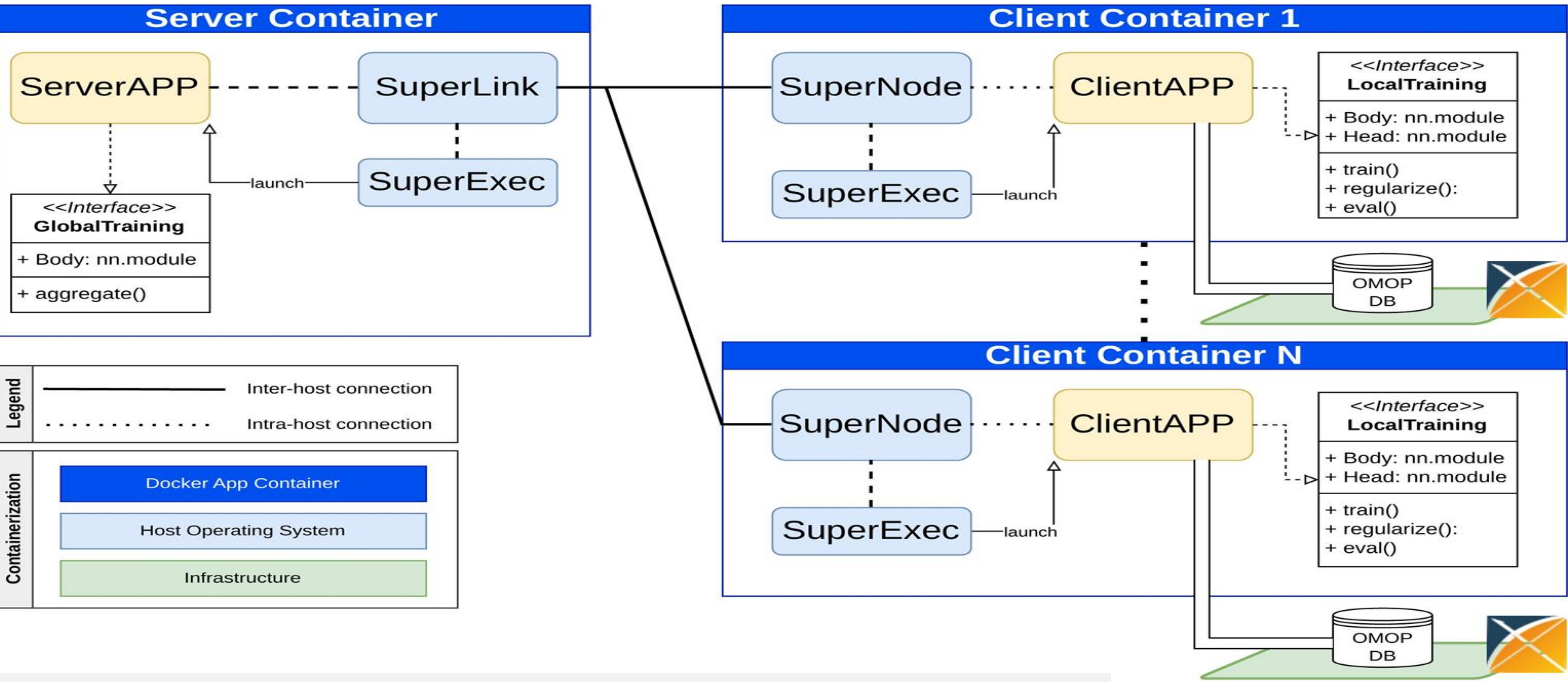
Results

Methods	Metric	Datasets		
		MIMIC-IV		Synthea
		$\alpha = 0.7$	$\alpha = 2$	
Local	mean	0.762 ± 0.044	0.731 ± 0.020	0.680 ± 0.011
	min	0.717	0.716	0.669
FedAvg ⁵	mean	0.806 ± 0.036	0.842 ± 0.002	0.696 ± 0.01
	min	0.757	0.839	0.685
FedPer ⁶	mean	0.831 ± 0.007	0.841 ± 0.003	0.680 ± 0.006
	min	0.822	0.836	0.673
Pooled	-	0.86		0.75

Accuracy



Methods



Limitation: Validated on MIMIC-IV (partitioned) and Synthea (synthetic).
Real multi-site deployment ongoing. github.com/manjahdani/fedomop



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