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Federated generalized linear model for multimodal data analysis

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We propose a generalized linear model for distributed multimodal data, where each sample contains multiple data modalities, each collected by an instrument. Unlike the centralized methods that require access to all samples, our approach assumes that samples are distributed across several sites, and pooling the data is not allowable due to data sharing constraints. Our approach constructs a set of local predictive models based on available multimodal data at each site. Next, the local models are sent to an aggregator that constructs an aggregated model. The models are obtained by minimizing local and aggregated objective functions that include penalty terms to create consensus among the data modalities and the local sites. Through extensive simulations, we compare the performance of the proposed method to local and centralized benchmarks. Furthermore, we assess the proposed framework for predicting the severity of Parkinson's based on the patient's activity data collected by the mPower application

Type of presentation

Talk

Classification

Mainly methodology

Keywords

Federated and Distributed Analytics; Multimodal Data; Parkinson Disease Telemonitoring

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