Academy of Mathematics and Systems Science, CAS
Colloquia & Seminars

Speaker: Zhanfeng Wang，中国科学技术大学

Inviter:

Title: Distributed sequential federated learning

Language: Chinese

Time & Venue: 2023.08.24 20:00 腾讯会议:421112204

Abstract:

The analysis of data stored in multiple sites has become more popular, raising new concerns about the security of data storage and communication. Federated learning, which does not require centralizing data, is a common approach to preventing heavy data transportation, securing valued data, and protecting personal information protection. Therefore, determining how to aggregate the information obtained from the analysis of data in separate local sites has become an important statistical issue. The commonly used averaging methods may not be suitable due to data nonhomogeneity and incomparable results among individual sites, and applying them may result in the loss of information obtained from the individual analyses. Using a sequential method in federated learning with distributed computing can facilitate the
integration and accelerate the analysis process.We develop a data-driven method for efficiently and effectively aggregating valued information by analyzing local data without encountering potential issues such as information security and heavy transportation due to data communication. In addition, the proposed method can preserve the properties of classical sequential adaptive design, such as data-driven sample size and estimation precision when applied to generalized linear models. We use numerical studies of simulated data and an application to COVID-19 data collected from 32 hospitals in Mexico, to illustrate the proposed method.

中国科学院 CHINESE ACADEMY OF SCIENCES
版权所有 © 中国科学院数学与系统科学研究院 备案号：京ICP备05002806-1号 京公网安备110402500020号
电话：86-10-82541777 传真：86-10-82541972 Email：contact@amss.ac.cn
地址：北京市海淀区中关村东路55号 邮政编码：100190