ICDAM-2024
5ᵗʰ International Conference on Data Analysis and Management

Organized by London Metropolitan University, London, UK (Venue Partner)
in association with
WSG University, Bydgoszcz, Poland, Europe
&
Portalegre Polytechnic University, Portugal, Europe
&
BPIT, GGSIPU, Delhi
Date: 14ᵗʰ - 15th June 2024

************** CALL FOR PAPERS **************

SPECIAL SESSION ON
Adoption of Federated Learning for Healthcare Informatics

SESSION ORGANIZERS:
Balamurugan Balusamy

Associate Dean-Student Engagement, Shiv Nadar University, India. Kadavulai@gmail.com

Shitharth Selvarajan

Cyber Security & Digital Forensics,
School of Built Environment, Engineering and Computing,
Leeds Beckett University, LS1 3HE Leeds, U.K.
Email: s.selvarajan@leedsbeckett.ac.uk

A. Daniel

Associate Professor, Amity University, Gwalior, Madhya Pradesh, India
danielarockiam@gmail.com

EDITORIAL BOARD: (Optional):
[Name, University or Organization, Country, e-mail]

SESSION DESCRIPTION:

Federated Learning and Healthcare: Enabling Collaborative Advancements in Patient-Centric Solutions

Introduction: The integration of federated learning with healthcare has emerged as a promising approach to overcome the challenges of data privacy and security while leveraging the collective intelligence of distributed healthcare data sources. Federated learning, a privacy-preserving machine learning technique, enables healthcare institutions to collaborate and jointly train models without sharing sensitive patient data. This write-up explores the potential of federated learning in healthcare and its implications for patient-centric advancements.

Background and Significance: Healthcare organizations possess vast amounts of valuable patient data that can be leveraged to improve diagnostic accuracy, treatment outcomes, and overall healthcare quality. However, privacy concerns and regulatory requirements hinder the direct sharing of this data. Federated learning addresses this predicament by allowing healthcare institutions to collaborate and collectively train machine learning models while keeping patient data secure and private.

Benefits of Federated Learning in Healthcare: Federated learning offers several benefits to the healthcare domain. Firstly, it enables the creation of robust and accurate models by aggregating knowledge from diverse healthcare settings without compromising patient privacy. Secondly, it allows for the development of personalized healthcare solutions that account for variations in patient demographics, medical conditions, and treatment responses across different healthcare institutions. Moreover, federated learning promotes a collaborative environment where healthcare professionals can share expertise, insights, and best practices to improve overall patient care.

Methodological Considerations: Implementing federated learning in healthcare requires careful consideration of various factors. Privacy-preserving techniques, such as secure aggregation, differential privacy, and encryption, are employed to safeguard patient data during the model training process. The federated learning framework involves the selection of participating institutions, data partitioning, model optimization, and secure model aggregation to ensure accurate and privacy-aware learning.

Future Directions: The potential applications of federated learning in healthcare are vast. It can aid in disease prediction, treatment optimization, early detection of adverse events, and population health management. As federated learning algorithms evolve and computational capabilities advance, it is essential to conduct further research on refining privacy mechanisms, optimizing communication protocols, and ensuring scalability. Additionally, collaboration among researchers, healthcare professionals, and policymakers is vital to establish robust standards and guidelines for implementing federated learning in healthcare.

Conclusion: Federated learning presents a transformative approach for healthcare institutions to collaborate, learn from shared data, and develop patient-centric solutions without compromising privacy. By leveraging the collective knowledge embedded in distributed healthcare data, federated learning empowers healthcare professionals to deliver personalized care, enhance diagnostic accuracy, and advance medical research. Embracing federated learning in the healthcare domain has the potential to revolutionize the way we approach healthcare, leading to improved outcomes and a more patient-centric healthcare system.

RECOMMENDED TOPICS:
Topics to be discussed in this special session include (but are not limited to) the following:

1.Privacy-Preserving Machine Learning in Healthcare

2.Secure Aggregation Protocols for Federated Learning in Healthcare

3.Patient Data Privacy in Federated Learning for Healthcare Applications

4.Federated Learning Frameworks for Collaborative Medical Research

5.Personalized Healthcare Solutions using Federated Learning

6.Federated Learning for Disease Prediction and Early Detection

7.Federated Learning for Clinical Decision Support Systems

9.Federated Learning for Remote Patient Monitoring

10.Federated Learning for Imaging and Diagnostics in Healthcare

11.Federated Learning for Electronic Health Records (EHR) Analysis

12.Federated Learning for Drug Discovery and Pharmacovigilance

13.Federated Learning for Health Risk Assessment and Prevention

14.Federated Learning for Predictive Analytics in Healthcare

15.Federated Learning for Healthcare Data Fusion and Integration

16.Federated Learning for Precision Medicine and Treatment Optimization

17.Federated Learning for Healthcare Resource Allocation and Planning

18.Federated Learning for Telemedicine and Remote Consultations

19.Federated Learning for Healthcare IoT and Wearable Devices

20.Ethical and Legal Implications of Federated Learning in Healthcare

21.Challenges and Future Directions of Federated Learning in Healthcare

SUBMISSION PROCEDURE:
Researchers and practitioners are invited to submit papers for this special theme session on **Adoption of Federated Learning for Healthcare Informatics on or before 30 March 2024 .** All submissions must be original and may not be under review by another publication. INTERESTED AUTHORS SHOULD CONSULT THE CONFERENCE'S GUIDELINES FOR MANUSCRIPT SUBMISSIONS at https://icdam-conf.com/downloads . All submitted papers will be reviewed on a double-blind, peer-review basis.

NOTE: While submitting a paper in this special session, please specify **Adoption of Federated Learning for Healthcare Informatics** at the top (above paper title) of the first page of your paper.

* * * * * *