

Federated Learning for Health Analytics

ABSTRACT:

- Our project is based on the papers *Federated Learning for Healthcare Informatics*^[1] which discusses about how federated learning technologies can improvise the machine learning practice and create a global improvement; by utilizing the data collected in distributed hospitals without compromising data privacy of its patients by sharing only the inferences of local model training or optimization; not the entire local data. The best part is that this collection of local improvements will, in turn, produce a much efficient global model respecting all the data privacy laws.
- In this project we are trying to use *Federated Learning*^[2] technology in Health Analytics purpose, such as performing segmentation of tumour areas, patient similarity learning, predicting future hospitalization etc...
- The main constraint while creating Machine Learning model in Health Sector are respectable privacy policies
- By Federated Learning, we can perform machine learning on decentralized server or devices (here on local server of the respective hospital) preserving privacy constraints
- Then we pass only the learned inference of the respective model trained on the local server to a central server
- Similarly, the inferences of multiple servers from different hospitals contribute their inferences and these are aggregated to form a globally improved model
- This model is then shared with all the participants, and they can attain a globalized improvised performance

Project Areas:

- ❖ Federated Learning
- ❖ Data Science
 - Data analytics
 - Machine Learning
 - Deep Learning
- ❖ Cloud Computing

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AFFIDAVIT:

We the group members of the project (Joseph Joel C.P, Maneesh Manoj, Rashi M and Sreerag R Nandan) solemnly state that the contents of this documents are true to the best of our knowledge and belief and that it conceals nothing and that no part of it is false.

[1] <https://arxiv.org/pdf/1911.06270.pdf>

[2] <https://www.coursera.org/lecture/advanced-deployment-scenarios-tensorflow/how-it-works-Rs6HP>