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Propositions

accompanying the dissertation

Federated learning for collaborative healthcare research and aging biomarker design

by

Swier Jurjen Frans GARST

🎓1. In real world situations, Federated Learning is able to create models of equal quality to central machine learning models.

🎓2. The current trend of creating aging biomarkers trained on a single task using as many proteins as can be measured hampers the clinical use of these markers.

🎓3. Federated data analysis methods, especially unsupervised approaches such as clustering, require more fundamental conceptual modification from their centralized counterparts than supervised federated machine learning algorithms.

4. Development of model inversion attacks in federated learning is an academic exercise with little implications to most real world federated learning systems.

5. The relatively low occurrence of causality analyses in computational biology is worrying.

6. AI-based medical advice could lead to placebo by AI by mimicking patient-provider interactions, which does not have to be a bad thing.

7. Conference submissions should include a short recorded pitch in order to help determining whether a submission should be accepted as oral presentation or as a poster.

8. Datasets for which state-of-the-art machine learning models achieve an accuracy above 90%, such as MNIST or CIFAR-10, are unsuitable for demonstrating meaningful performance gain for new machine learning models.

9. In order to find the next big scientific challenge in federated learning, the field requires more real world implementations.

10. In exercise program design, the enjoyment of the individual is often overlooked.

🎓Pertains to this dissertation

These propositions are regarded as opposable and defendable, and have been approved as such by the promotors prof. dr. ir. M.J.T. Reinders and prof. dr. P.E. Slagboom.