Write a brief review of the story. Your review should cover the main idea and give your reaction to it, focusing on possible applications.

One of the hottest fields today is machine learning and big data. Both ideas are centered on the idea that by aggregating data millions of user’s trends, we can best predict what to show to future users. Developments in the fields of distributed systems and cloud infrastructure have made it easier to centralize the training data on one machine or datacenter, but this has a few downsides. One of which is that a user’s data is being harvested and sent to the cloud, where it is stored, and therefore vulnerable to data breaches. Another disadvantage is the latency of updates in the model, having to do with the time to send new training data to the cloud, recompute the model, and then redeploy the model back to the user’s device.

Lastly, consider the affect of a single drop in a large bucket of water, analogous to one’s data being fed through a model that has already been trained on millions of datapoints. The model is not going to change much because of one user, since that

Federated Learning is a new approach that attempts to tackle some of these challenges by collaboratively learning a shared model, while keeping an individual’s data on the device, meaning massive centralized training sets are no longer needed in the cloud.

It works like this: your device downloads the current model, improves it by learning from data on your phone, and then summarizes the changes as a small focused update. Only this update to the model is sent to the cloud, using encrypted communication, where it is immediately averaged with other user updates to improve the shared model. All the training data remains on your device, and no individual updates are stored in the cloud.