



FedPandemic: A Cross-Device Federated Learning Approach Towards Elementary Prognosis of Diseases During a Pandemic

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INTRODUCTION

- Symptom prognosis and analysis are important tools of pandemic management.

- A novel tool towards prominent symptom detection while retaining client privacy during an outbreak.

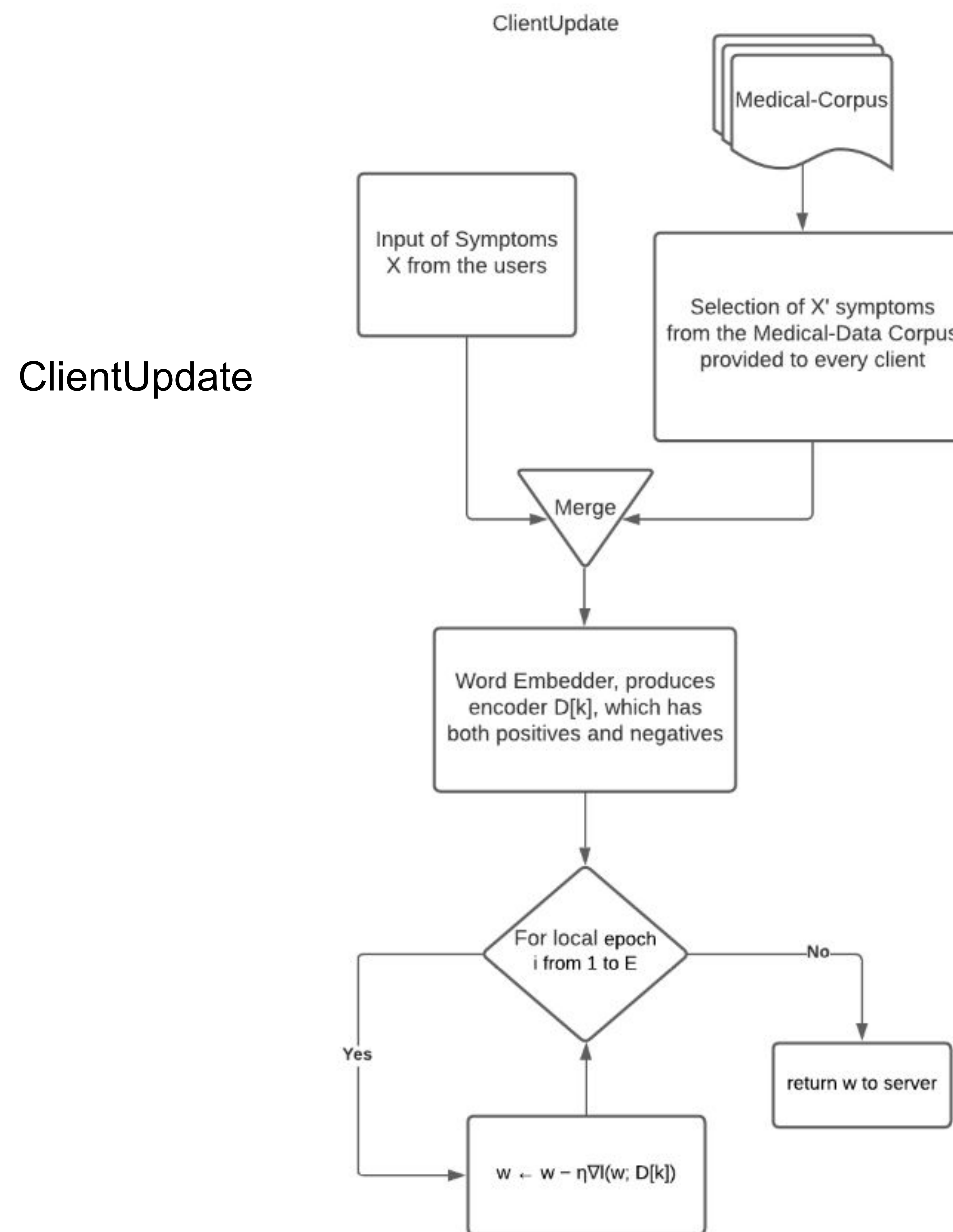
- **FedPandemic** employs Word Embeddings as feature extractors for a binary classification model (detecting COVID or not), which is trained using the Federated Averaging (FedAvg) Algorithm (McMahan et al, 2016) along with a noise algorithm.

- Conduct four simulations; (1) Large Medical Institutes (Baseline) (2) Medium Ranged Medical Institutes, like Hospitals, NGOs, etc. (3) Small Ranged Medical Institutes, like clinics and health care centres (4) Individual/Family Contributions.

REFERENCES

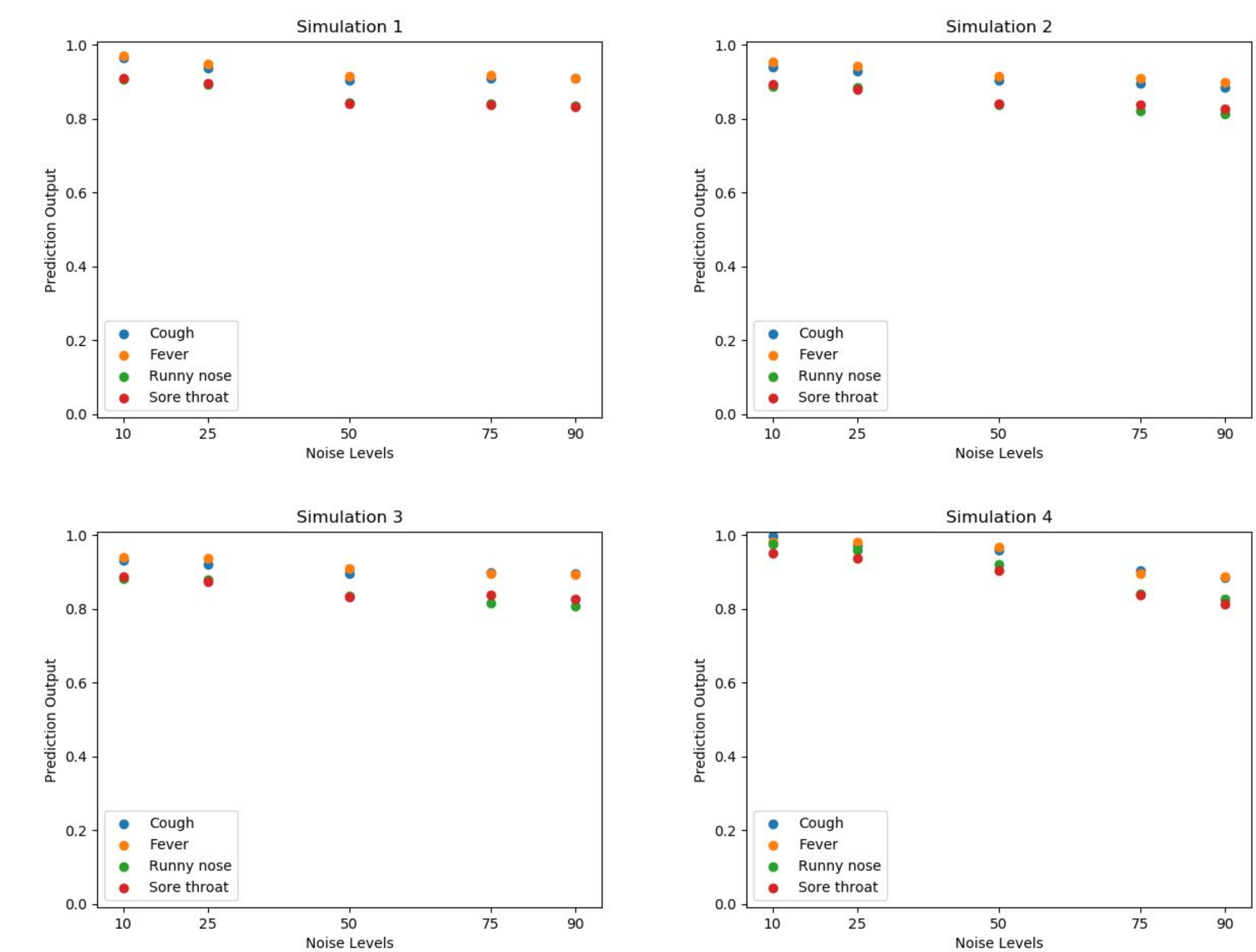
- 1) McMahan, H. B., Moore, E., Ramage, D., Hampson, S., and y Arcas, B. A. Communication-efficient learning of deep networks from decentralized data. In Proceedings of the 20th International Conference on Artificial Intelligence and Statistics, pp. 1273–1282, 2017
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METHODOLOGY



EXPERIMENTS

- Collected data of five countries from Statista
- Classifier: (50, 32, 16, 8, 1)
- GloVe embeddings (Pennington et al, 2014)



CONCLUSION

- Accuracy for detecting relevant symptoms drops with increasing noise levels.
- Higher the ϵ value, lower amount of noise hence higher accuracy.

