EPI update

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17th of January 2024

Projects

1. Private and Secure Distributed Deep Learning: A Survey
   (submitted to Computing Surveys)
2. Vertical Split Learning - an exploration of predictive performance in medical and other use cases
   (published IJCNN 2022)
3. Predicting stroke outcome: a case for multimodal deep learning
   (Published at Artificial Intelligence in Medicine)
4. Secure vertical federated learning for predicting stroke outcome
5. Qualitative evaluation of a prediction model for stroke outcome and its visualizations (submitting to JMIR human factors)

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2. Vertical Split Learning - an exploration of predictive performance in medical and other use cases
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3. Predicting stroke outcome: a case for multimodal deep learning
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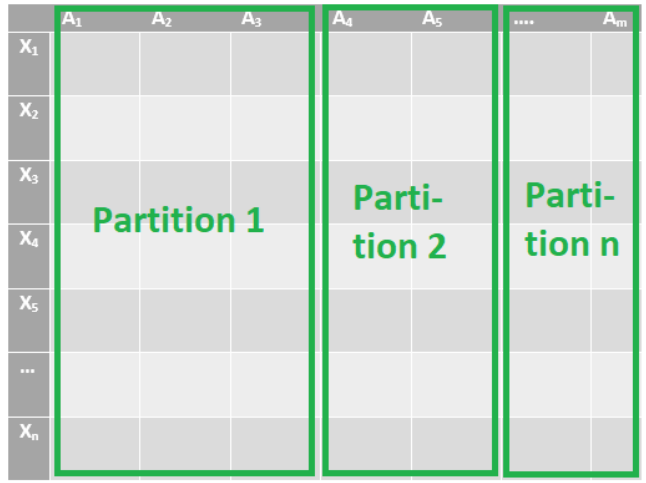
4. **Secure vertical federated learning for predicting stroke outcome (DISPERSE project)**
5. Qualitative evaluation of a prediction model for stroke outcome and its visualizations (submitted to JMIR human factors)

DISPERSE: Vertical federated learning for predicting stroke outcome

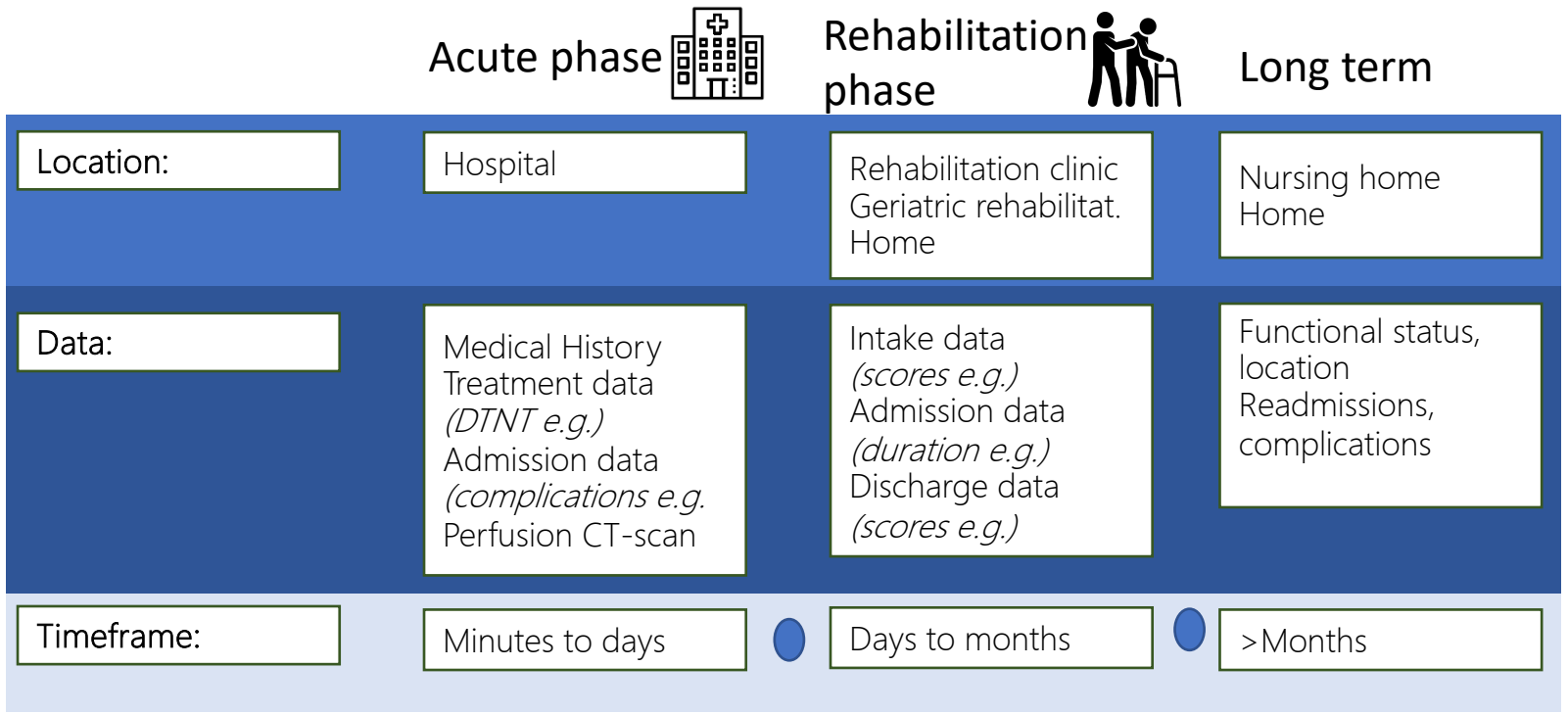
Goal: predicting MrS score after 3 months

Comparison of 3 situations

- Prediction model St. Antonius Ziekenhuis
- Prediction model Rehabilitation clinics
- Prediction model both -> **Vertically** partitioned data
  - Fully centralized
  - Vertical Federated Learning (VFL)
  - Secure VFL

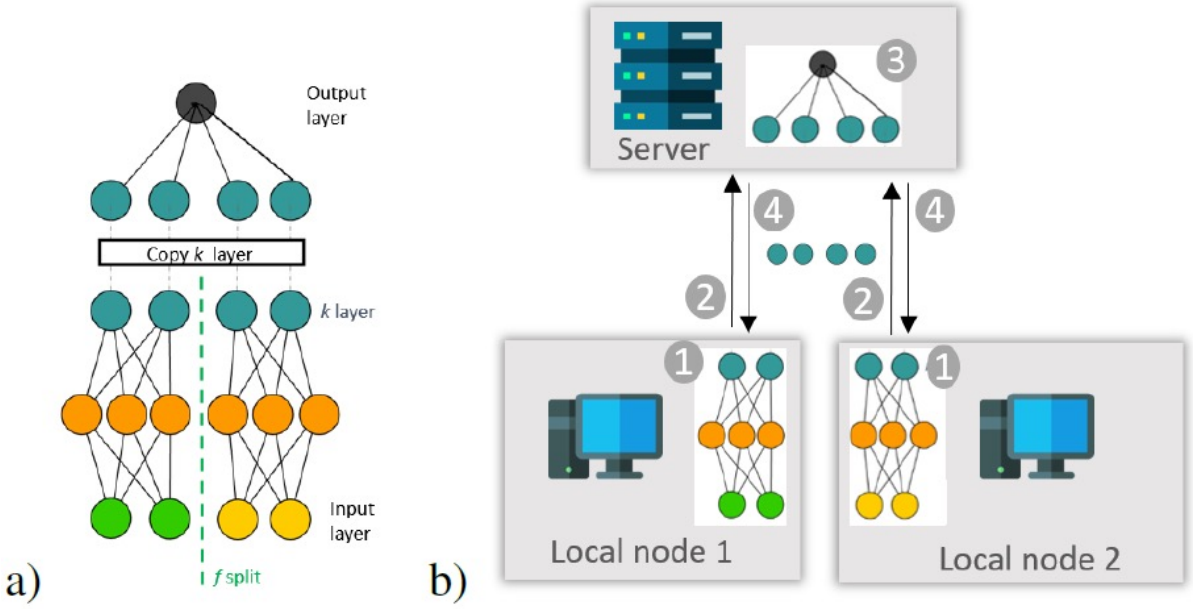


DISPERSE: Data Collection



Secure Vertical Federated Learning

- Vertical Split learning [1]
- Data leakage of data and labels
- Security
  - Encrypting the models and the information exchanged between parties
- Evaluate for predictive performance, efficiency and security



Secure Vertical Federated Learning

- First results:
  - better security and accuracy
  - at the cost of efficiency

- Future work:
- Apply the framework to St. Antonius data
- Goal: Artificial Intelligence in Medicine (AIME) ‘24
  - Deadline 12 feb

ANY QUESTIONS?