EPI update

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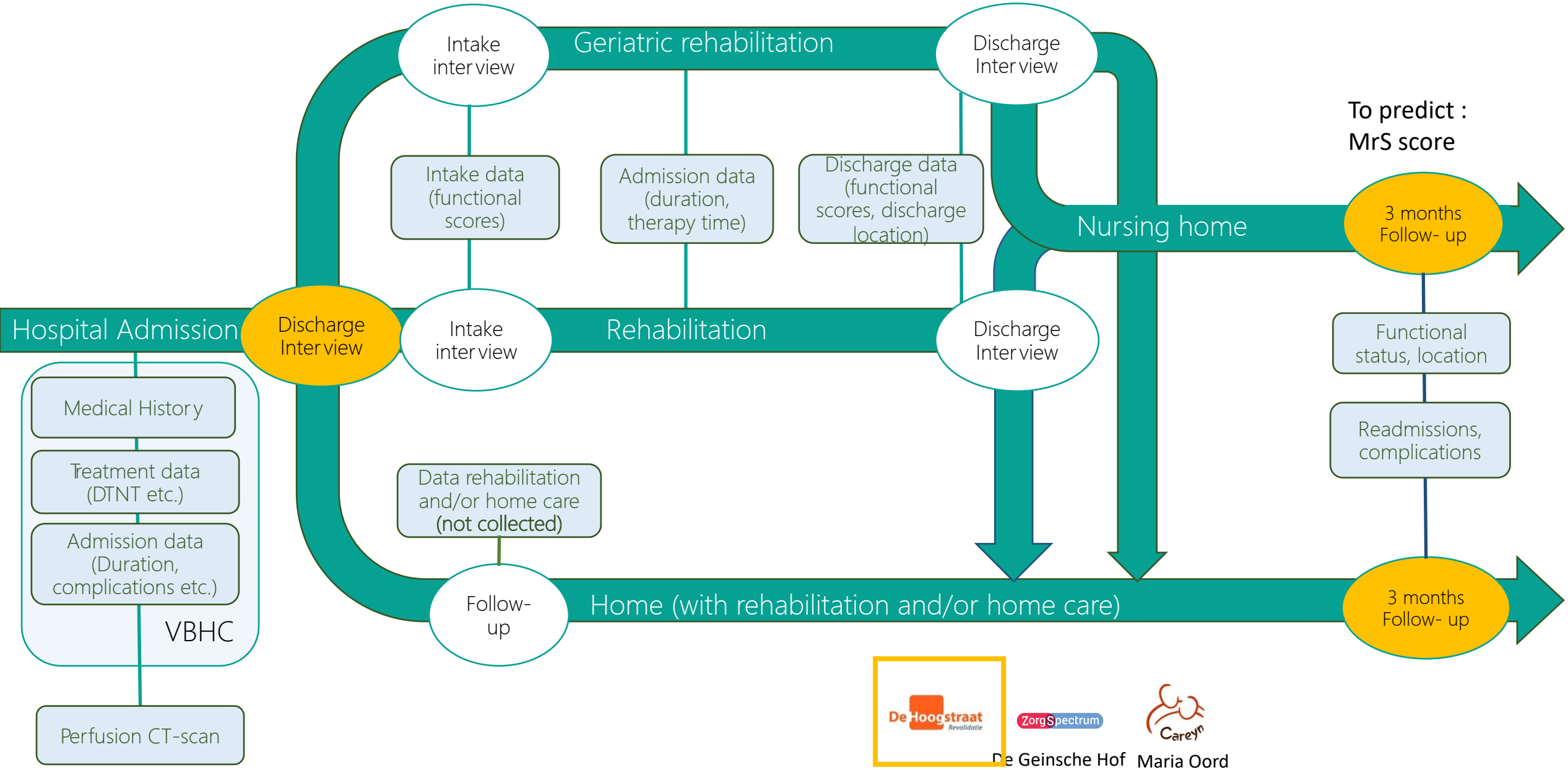
8th of November, 2022

Projects

- Privacy Preserving Distributed Deep Learning: a Survey
- “Vertical Split Learning - an exploration of predictive performance in medical and other use cases” – published at IJCNN 2022
- DISPERSE: Vertical federated learning for CVA with hospital and rehabilitations clinic
- **CVAprediCT: Prediction model on multimodal data: clinical data and perfusion CT-scans**
- **Evaluation for use of a CVA rehabilitation prediction model in practice**

Data collection



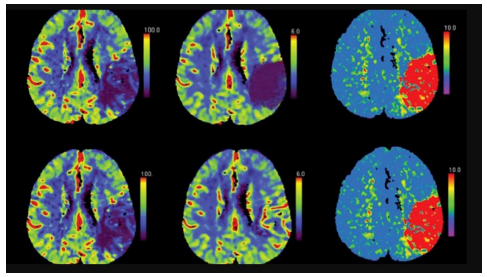
De Hoogstraat Revalidatie
ZorgSpectrum
De Geinsche Hof
Careyn
Maria Oord

CVAprediCT: Prediction model on multimodal data

Clinical dataset

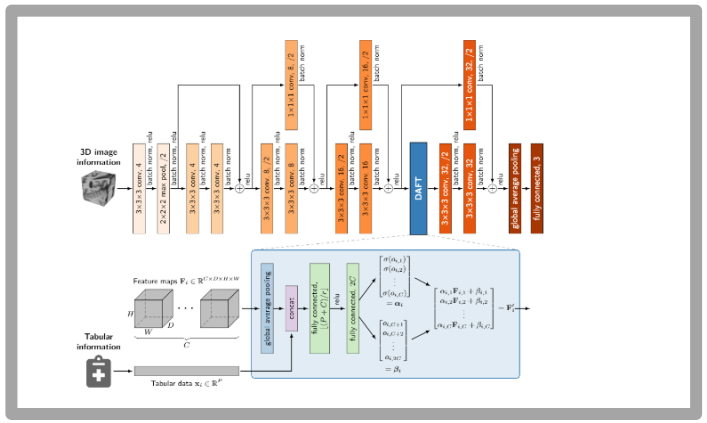
Dutch Acute Stroke Audit (DASA) dataset

Perfusie CT-scans



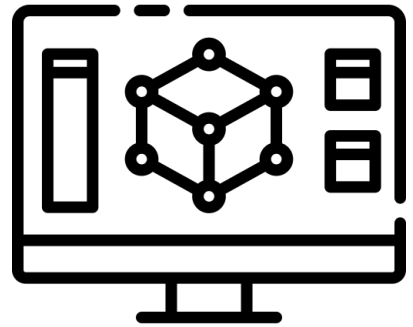
Data input

Deep learning model



- DAFT: Neural network for medical multimodal data

Model



Prediction

Functional status 3 months after CVA

- Good: MrS score 0-2
- Bad: MrS score 3-6

Prediction outcome

With masterstudent Balázs Borsos

CVAprediCT: Results

Author	Model	Accuracy	AUC	F1-score	Dataset size
Bacchi et al. [6]	Naive late fusion	0.74	**0.75**	0.69	204
Samak et al. [54]	IMF block	0.77	**0.75**	0.62	500
Our	DAFT	**0.80**	**0.75**	**0.80**	98

- Created a model for subset of CVA patients: Visible occlusion on the CTP scan
- Multimodal data leads to better predictions than only clinical or CT perfusion
- Future work:
  - Extend to a larger group of CVA patients
  - Interpretability

Prediction model - Visualisations

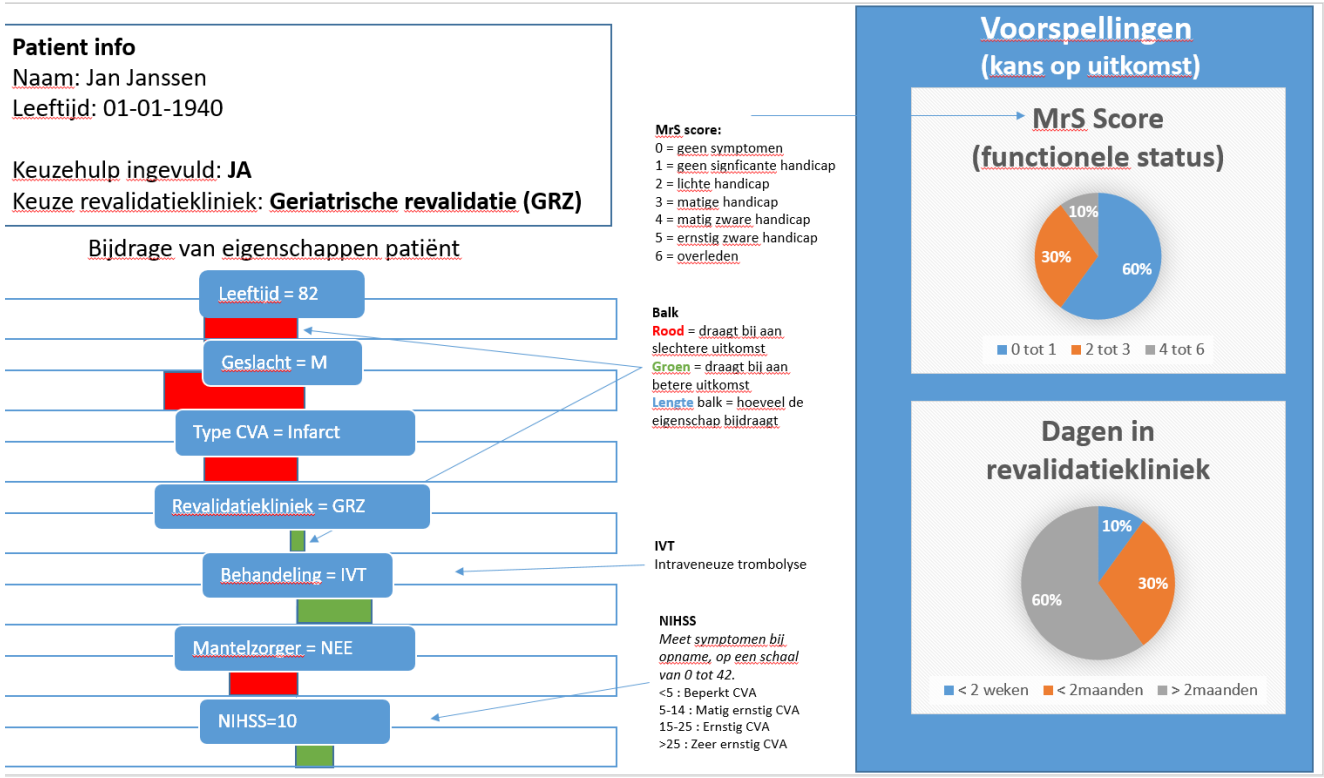
Completed focusgroups with patients and health care professionals

- Insights on the experiences and expectations of rehabilitation
- Discussion on the use of prediction models and visualisations

3 focusgroups with health care professionals, 3 focusgroups with patiënts and informal caregivers (mantelzorgers)

- 21 participants
- Health care professionals and patients separated

(with masterstudent Sanne van Houwelingen)



First conclusions evaluation research

- Preference for ‘visual’ prediction models
- Not all patients interested in predictions > high trust in care professionals
- Quickly ‘too much’ information
- Informal caregiver very enthusiastic, need for more information about expectations

Future work

- Implement the feedback into new prototypes
- Reiteration of the evaluation with the health care professionals