

Supplementary Material

S1. inclusion and exclusion criteria

The inclusion and exclusion criteria used in this study are as follows.

Inclusion criteria:

- Participants with 7T and 3T MRI scanned within two years.

Exclusion criteria:

- Participants who did not have a diagnosis of CU or MCI at the most recent diagnosis to the date of the 7T MRI scan.
- Participants whose diagnosis results closest to the 3T MRI scan are inconsistent with the diagnosis results closest to the 7T MRI scan.
- Participants with at least one missing modality in 7T-T1w, 7T-T2w, 3T-T1w and 3T-T2w.
- Participants who experienced registration failure during registration (described in section 2.2) from other modalities to 7T-T2w.

To collect longitudinal scans for test participants, one inclusion criteria and one exclusion criteria were added to the criteria above. The **additional inclusion criteria** is “The participants who had more than one 7T/3T pairs” and the **additional exclusion criteria** is “The participants whose diagnoses in two longitudinal 7T scans were not consistent”.

Note: There was one exception in the training set that did not meet the inclusion criteria. The time interval between the 7T and 3T scans in this case was 33 months, and the most recent diagnosis on the 7T scan (the earlier scan) was MCI, and the most recent diagnosis on the 3T scan (the later scan) was CU.

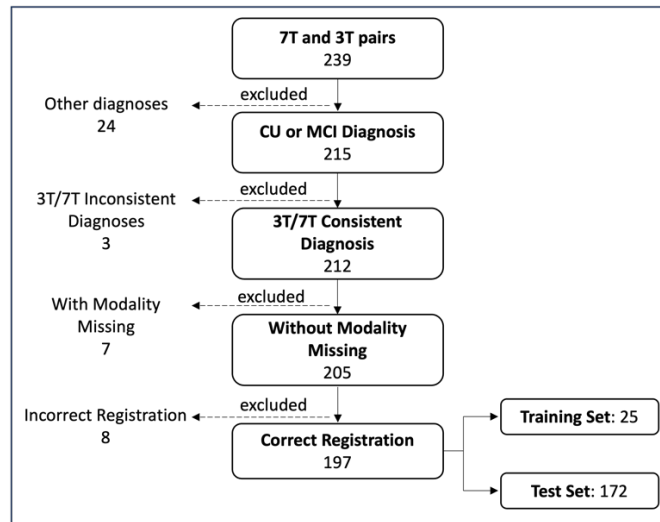


Figure S1 Participant selection according to inclusion and exclusion criteria.

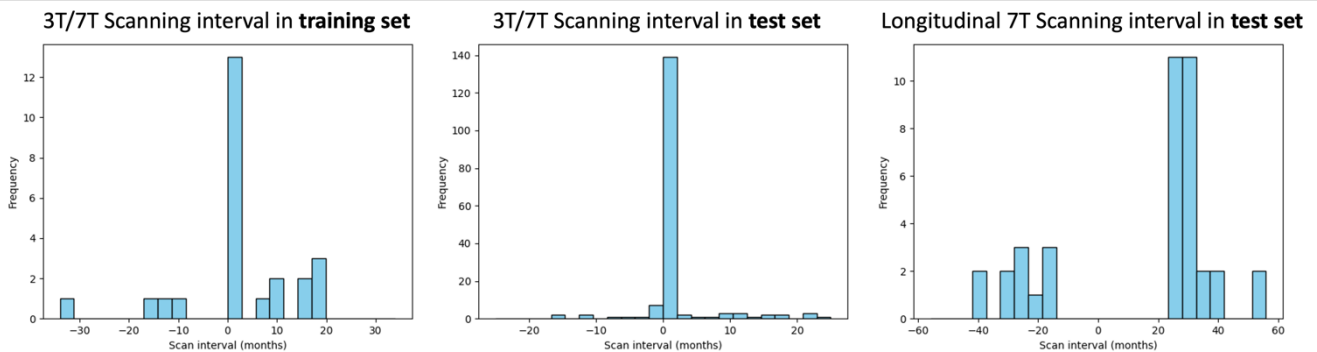


Figure S2 distributions of Scanning interval between 3T and 7T MRI scans in both training and test set and longitudinal 7T scans in test set

25 **S2. Example of visual registration checking**

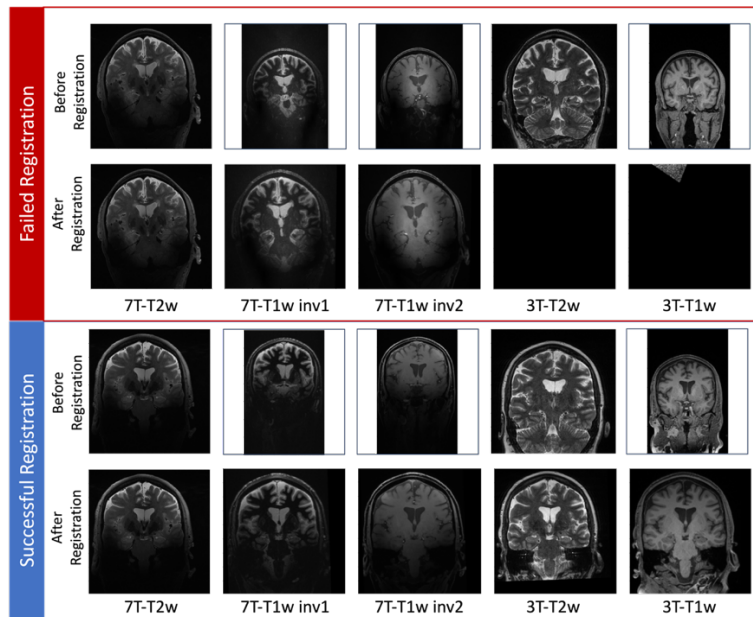
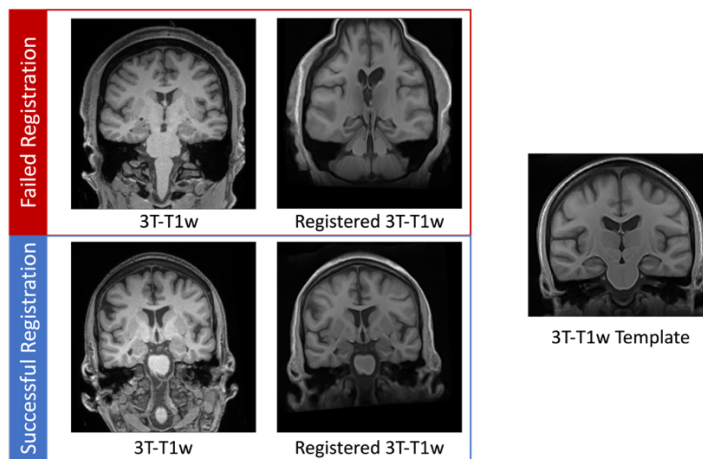
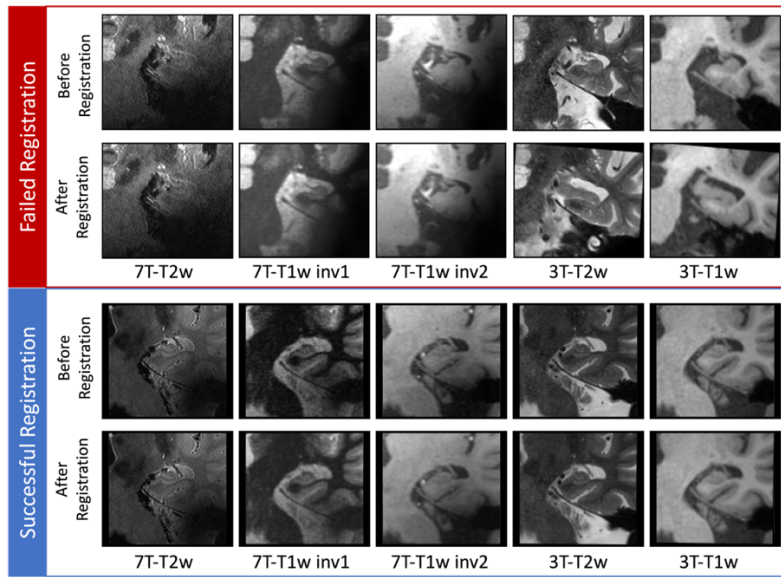


Figure S3 Examples of failed and successful whole-brain registration. In the first example, the registrations from 3T-T1w and 3T-T2w to 7T-T2w were failed. This situation was excluded by visual checking.



30 Figure S4 Examples of failed and successful 3T-T1w template deformable registration. In the first example, the registrations from 3T-T1w template to 3T-T1w was failed. This situation was excluded by visual checking.



35 *Figure S5 Examples of failed and successful local registration. In the first example, the registrations from 3T patches to 7T-T2w patch was failed. This situation was excluded by visual checking.*