for head-motion. These resampled asl time-series will be referred to as *preprocessed asl in original space*, or just *preprocessed asl*. The CBF was quantified from *preproccessed* ASL data using a relatively basic model (Detre et al. 1992) (Alsop et al. 2015). CBF are susceptible to artifactsdue to low signal to noise ratio and sensitivity to motion, Structural Correlation based Outlier Rejection (SCORE) algothim was applied to the CBF to discard few extreme outliers (Dolui et al. 2017). Furthermore,Structural Correlation with RobUst Bayesian (SCRUB) algorithms was applied to the CBF by iteratively reweighted CBF with structural tissues probalility maps (Sudipto Dolui David A. Wolk and Detre 2016). Alternate method of CBF computation is Bayesian Inference for Arterial Spin Labeling (BASIL) as implmented in FSL which is based on Bayeisan inference principles (Chappell et al. 2009). BASIL computed the CBF from ASL incoporating natural varaibility of other model parameters and spatial regularization of the estimated perfusion image. BASIL also included correction for partial volume effects (Chappell et al. 2011). The ASL and CBF dreivatives were resampled into standard space, generating a *preprocessed ASL and computed CBF in MNI152NLin2009cAsym space*. First, a reference volume and its skull-stripped version were generated . Several confounding time-series were calculated based on the *preprocessed ASL*: framewise displacement (FD) and DVARS. FD and DVARS are calculated for each ASL run, both using their implementations in *Nipype* (following the definitions by Power et al. 2014). The head-motion estimates calculated in the correction step were also placed within the corresponding confounds file.

The following quality control (qc) measures was estimated: framewise displacement and relative root mean square dice index. Other qc meaure include dice and jaccard indices, cross-correlation and coverage that estimate the coregistration quality of ASL and T1W images and normalization quality of ASL to template. Quality evaluation index (QEI) was also computed for CBF (S. A. N. Sudipto Dolui Ronald Wolf 2016). The QEI is automated for objective quality evaluation of CBF maps and measured the CBF quality based on structural similarity,spatial variability and the percentatge of voxels with negtaive CBF within Grey matter All resamplings can be performed with *a single interpolation step* by composing all the pertinent transformations (i.e. head-motion transform matrices, susceptibility distortion correction when available, and co-registrations to anatomical and output spaces). Gridded (volumetric) resamplings were performed using `antsApplyTransforms` (ANTs), configured with Lanczos interpolation to minimize the smoothing effects of other kernels (Lanczos 1964).

Many internal operations of *aslprep* use *Nilearn* 0.7.0 (Abraham et al. 2014, RRID:SCR_001362), mostly within the functional processing workflow. For more details of the pipeline, see the section corresponding to workflows in *aslprep*'s documentation.

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