

ER-flow Application Description Template

Application Name: DTI Preprocessing
Application domain: Medical Imaging
Brief description of application Diffusion Tensor Imaging (DTI) measures the diffusion of water in and between fibers. The diffusion is high parallel to and low (restricted) perpendicular to the fiber orientation. Per subject, the amount of water diffusion is measured in 30 to 60 three-dimensional (3D) orientations. The DTI Preprocessing application implements steps to correct for motion artifacts, filter noise and reformat raw DTI data for further processing with other tools (FSL BedpostX and DTI Population Registration).
Data: input data format: Three types of data are supported: 1) dicom (.dcm); 2) PARREC (.PAR and .REC); 3) nifti (.nii), with gradient directions and b-values files, one of these options: dwi.nii, dwi.bvec, dwi.bval; dwi.nii, bvecs, bvals output data format: The output-files zipped together into one archive (.zip) sample data: lfn://lfc.grid.sara.nl:5010/grid/vlmed/AMC-e-BioScience/medical-imaging/dti-preprocessing/sample-data/preprocessing-input.zip application, documentation, and explanation about output files http://shiwa-repo.cpc.wmin.ac.uk/shiwa-repo/public/edit-application.xhtml?appid=5709 publication n.a.
Execution environment DCI: (EGI, SRM/LFC, vlmed VO) middleware: gLite, CVMFS workflow system: MOTEUR, WS-PGRADE
Execution characteristics data size (per unit, typical number of units): input: 100-200 MB temporary: output: 100 MB processing time (per unit): 1 hours memory usage: n.a. disk usage: 100 MB
Target users Neuroscientists, radiologists, psychiatrists of the AMC Brain Imaging Center http://www.lebic-amc.nl number of users: 10+ user type: end-user
Usage scenario for workflow in the ER-FLOW Workflows have been implemented for MOTEUR and WS-PGRADE to port this application to EGI for the vlmed VO and the SHIWA VO. These workflows are published on the SHIWA repository with appropriate documentation and metadata. Users start DTI preprocessing from the AMC science gateways. Additionally, the workflows can be accessed and executed via the SHIWA Portal by external users and used to compose meta-workflows.
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