Actor - Neural Network API

Use cases:

getAugmentedData() - retrieves data that has passed through the preprocessing API and augmenting API. This type of data is suited for the Neural Network API and can more easily work on it.

Dataset - We used two datasets in this study: one from the ADNI and the other from the SNUBH. From ADNI, we included participants in both ADNI1 and ADNI2 who had 3.0 T T1-weighted images and were diagnosed as CN or mild AD (CDR of 0.5 or 1). For up-to-date information about the ADNI. From the SNUBH, we included AD patients and CN controls with T1-weighted images whose age, sex, and CDR were matched to the patients from the ADNI.

getDataSet(), setDataSet() - getter and setter for dataset

imageAcquisition(AugmentedData data) - The 3D brain image inputs were first resampled into a grid of 256 × 256 × 256 voxels with an isotropic spatial resolution of 1 × 1 × 1 mm. From the resampled complete images, coronal slices around the MTL were extracted using two rounds of rigid transformation. In the first rigid transformation, the position of the input image was matched to a template constructed from a CN elderly population. In the second rigid transformation, the skull-stripped and template-registered input images were registered to a skull-stripped version of the template from the first step (skull-stripped using the same custom algorithm). In this manner, the two-step rigid transformation process was used to increase the accuracy of the registration of each subject's brain parenchyma to the template.

establishDiagnosticCriteria(Criteria) - The Logical Memory II subscale of the Wechsler Memory Scale-Revised score was used, with scores of > 8, > 4, and > 2 for > 16, 8–15, and 0–7 years of education, respectively, indicating normal cognition. In SNUBH, the Consortium to Establish a Registry for Alzheimer's Disease Korean version was used, with standard deviations (SDs) greater than − 1.5 for the age-, sex-, and education-adjusted norms on ten neuropsychological tests indicating normal cognition.

generateDiagnostic() - generates diagnostic based on the given criteria.

getDiagnostic() - getter for the given diagnostic.