

## **XII PMT meeting on the EADC-ADNI Harmonization of Protocols for Hippocampal Segmentation**

Wednesday, September 26, 2012

Participants:

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Simon Duchesne	(SD)	– Laval University, Québec City, Canada
Clifford R. Jack	(CRJ)	– Mayo Clinic, Rochester, MN, USA
Lennart Thurfjell	(LT)	– GE

### BENCHMARK SEGMENTATION UPDATE

The benchmark segmentations from Master tracers are now corrected and ready to be implemented on the platform. The ICCs are above .94, for both intra and inter-rater (absolute model type). The mean overlapping values are 0.73 for 1.5T and 0.75 for 3T images. These segmentations were made according to the criteria of CSF exclusion described in the Harmonized Protocol.

SD will ask Nicolas Robitaille to compare these 5-level Dice's values with *ad hoc* automated thresholds, to verify whether or not ours can be comparable to what reported in the literature, that compare 2 (rather than 5) segmentations.

### CERTIFIED PLATFORM

We need to start the Qualification asap.

The platform for qualification is not yet available, because SD is waiting for a newer and more robust server and this will take 3-4 weeks for getting the system ready.

### NAÏVE TRACERS TRAINING PHASE

The final Training set for future tracers, that will be eventually released by this project, will consist of all of the ADNI images used for the Validation of the Harmonized Protocol.

For current Naïve tracers (who are already experienced tracers based on local protocols), we decided to halve the Benchmark set of images: Naïve will first trace 1 image at 1.5T and 1 at 3T and will receive a feedback about their adherence to the Protocol, comparing their segmentations to Master Tracers ones. Then Naïve will proceed with the other images at 1.5T and at 3T and they will receive another feedback. If feedback will be positive, they will move to the remaining set of benchmark images to get the final qualification, otherwise they will iterate the segmentations on the first half of benchmarks, until they will have properly learnt how to trace according to the Harmonized Protocol.

We will immediately alert Naïve tracers that they will have strict deadlines and thus short time to segment the first images.

The variability of these first segmentations will provide an idea about the acceptable variability for defining reliable certification thresholds.

### BETA-TEST PROPOSAL

We received 3 proposals for possible beta-users:

1- Lei Wang, whose project aims to the construction of a library of atlases for the purposes of mapping MR scans such as the ADNI data set. He asked to use the labels already segmented based on local protocol and to be informed when harmonized labels will be available. He offered to solve the conversion of MultiTracer files into more common format.

2- Masami Nishikawa, whose project aims to validate the new version of VSRAD (Voxel-based Specific Regional analysis system for Alzheimer's Disease), comparing it versus the Harmonized Protocol as the gold standard method to manually measure hippocampal volume. He asked to learn how to trace according to the Harmonized Protocol. He offered hippocampal segmentations on E-ADNI phantom images (3 healthy volunteers scanned twice by the 7 different machines). These segmentations will contribute for the validation of the Harmonized Protocol.

3- Ronald Pierson, whose project aims to compare the results of the current hippocampal segmentation with other hippocampal definitions using BRAINS (Brain Research: Analysis of Images, Networks, and Systems). He asked to learn how to trace according to the Harmonized Protocol, to access benchmark labels and to know the ADNI IDs of benchmark subjects. Mutuality is not clear. We are discussing with him about possible cooperative issues.

#### CONFLICT OF INTEREST:

Due to possible conflict of interest regarding his new company, SD decided to withdraw from the SC of the Project regarding the decision about beta-tester proposals. He remains into the SC, when scientific publications are concerned.