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neuGRID - A Grid-Brained Infrastructure to Understand and Defeat Brain Diseases - 3rd Neuroscientific Data Challenge

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Launched early 2008 by the EC Research Infrastructure Unit, the neuGRID project has established a distributed e-Infrastructure interconnecting major clinical research centres in Europe, supplying neuroscientists with the most advanced ICT to defeat Alzheimer's Disease (AD) and neurodegenerative pathologies in general. Based on EGEE gLite, neuGRID has developed a harmonized and powerful environment to design, test and assess new disease markers.

Detailed analysis

The infrastructure now offers access to popular neuroimaging and data mining toolkits, which can be further composed and executed within the grid.

Capitalizing upon its former successful data challenge, presented at EGEE'09 in Barcelona, neuGRID will this time demonstrate the largest ever grid-based analysis in the field. This concluding challenge will aim at analysing both the US-ADNI and Australian-ADNI datasets (largest AD imaging datasets in the world) using a complex combination of the 3 mostly utilised cortical thickness extraction pipelines (i.e. markers of AD) with the ultimate objective of statistically comparing pipelines' outputs.

Conclusions and Future Work

Capitalizing upon its former prototype infrastructure, successfully demonstrated at the EGEE'09 Conference in Barcelona, neuGRID has delivered a third generation production quality environment.

It is now looking to extend its portfolio of research tools to become a recognised Scientific Gateway for neuroscientists within the European Research Area eco-system.

Impact

neuGRID addresses the needs of a large community of scientists. In particular, it aims to become the reference infrastructure of the European Alzheimer's Disease Consortium (EADC) representing more than 35 clinical research centres throughout Europe, and to deliver a European public facility for neuroscientists in general. Recently, neuGRID has kicked-off an international cooperation, so called outGRID, bringing together the best known neuroimaging centres in the world, i.e. the Laboratory of NeuroImaging from the University of California in Los Angeles in the U.S.A, developing the LONI Pipeline software (pipeline authoring interface widely used in the community) and the Montreal Neurological Institute from the McGill University in Canada. By pulling this expertise together, neuGRID intends to integrate a large portfolio of international leading edge neuroscientific tools which will benefit to the entire community.

To address this challenge, NeuGRID leverages on EGEE/gLite as its solid middleware foundation coupled with GEANT as its broadband high capacity network.

Keywords

grid, e-Infrastructure, neuroscience, Scientific Gateway, GEANT, EGI

URL for further information

<http://www.neugrid.eu>

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