Summary

tools/resources are categorized, and indicate what NITRC sub-capability enable easy comparison among tools with similar categories.

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Find Resources

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www.nitrc.org

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Introduction

Funded by the NIH Blueprint for Neuroscience Research, NIBIB, NIDA, NIMH, and NINDS (1), the NITRC family of services has expanded to support MR, imaging genomics, EEG/MEG, PET/SPECT, CT, optical imaging, clinical neuroimaging, and computational neuroscience communities. These services include:

1. NITRC Resources Repository (NITRC-R), the "go to" collaboration environment that enables the distribution, enhancement, and adoption of neuroimaging tools and resources
2. NITRC Image Repository (NITRC-IR), a curated repository of NITI-1 and Dicom imaging sessions searchable by metadata such as handedness, gender and group including ADHD-200, 1000 Connectomes, ABIDE, CandiShare Schizophrenia
3. NITRC Computational Environment (NITRC-CE), a virtual big data compute service pre-configured with tens of popular neuroimaging software analysis tools allowing a build your own, or pay-as-you-go compute experience via commercial clouds

Approach

Initially a resources registry for fMRI software, NITRC-R's scientific scope continues to broaden based upon the neuroinformatics research communities needs. As the need for identifying, evaluating and repurposing others' tools and resources was successfully met, the next pent-up demand was for a searchable image repository across multiple community-generated and shared datasets. As a result, leveraging XNAT, we developed NITRC-IR which is open to researchers as a data commons resource for their data sharing plans. Finally, scientists and researchers are more challenged to secure sufficient computational resources to execute complex computational analysis on these large data resources. So, leveraging NeuroDebian, we developed NITRC-CE which can be downloaded as a script to create your own virtual machine to use on your infrastructure, or you can pay-as-you-go using commercial cloud service including VM Marketplace and AWS Large instance (m1.large) and SGE parallelization over cores.

Summary

As a 2014 HHSinnovates Semi-Finalist innovation, NITRC is continually updated with new content, data, and services. NITRC has established itself as a key resource where neuroscience communities continue to utilize these resources in support of data sharing requirements, software dissemination and cost-effective computational performance.


Results

With over 42 million page views and 1 million sessions by 460,700 users, NITRC-R facilitates access to an ever growing number of neuroinformatics resources (currently, 780). Averaging 22,000 sessions and 81,300 pageviews per month, software and data from NITRC has been downloaded over 2.4 million times. NITRC-IR offers 6,180 subjects and 7,820 imaging sessions of searchable data across 12 projects to promote re-use and integration of these valuable shared data. With 75 subscriptions and growing, our newest service, NITRC-CE provides simplified deployment of cloud-based computation that supports FreeSurfer, FSL, AFNI and many other software resources. In real-world processing tests, a representative computation that would have taken 24 hours on a high-powered desktop took only 8 hours at a cost of only $4. The test was a FSL voxel-based morphometry (VBM) computation on 64 subjects from CANDIShare run on a 2.8 Ghz Intel Xeon Mac desktop versus AWS Large instance (m1.large) using SGE parallelization over 4 cores.

Detailed searches by metadata across Dicom and NITI-1 datasets and downloadable images and datasets.

Filter(s): (M/F LIKE M) AND (Field Strength LIKE 3) AND (Resting TR = 2000) AND (Age = 11)

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