

NITRC *Three Services*

◆ NITRC |

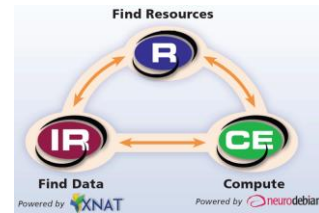
- The “go to” collaboration environment enabling the distribution, enhancement, and adoption of neuroinformatics resources: MR, CT, PET/SPECT, EEG/MEG, imaging genomics, optical imaging, clinical neuroinformatics, computational neuroscience

◆ NITRC |

- Curated repository of DICOM and NIfTI-1 images searchable by metadata such as handedness, gender and group, NIF Tier 3 registered, certain datasets on both NITRC-IR and their listed NITRC project
- 1000 Functional Connectomes (resting state), ABIDE (resting state), CANDIShare (T1 & manual segmentations); ADHD 200 (resting state); Beijing Enhanced DTI, Beijing Eyes Open Eyes Closed, Beijing Short TR; (diffusion data), INDI NKI/Rockland (resting state), PING (structural, diffusion & resting state)

◆ NITRC |

- From researchers executing data processing via cloud-based workflow tools (such as best-of-breed neuroimaging workflows or pipelines)
- Easy to access and use system with large pipeline and good computational resources both AWS and platform-independent





NITRC *Impact on End Users*

- ◆ **Faculty:** Use NITRC to point to software and data (theirs as well as others') for their courses
- ◆ **Students:** Use NITRC's community forums and other resources to get a feel for the neuroimaging community as a whole; Can study pros and cons of multiple existing potential solutions; Easy access to existing solutions
- ◆ **Experienced Users:** Optimize processing options by upgrading techniques and mixing and matching methods
- ◆ **See Our Testimonials on nitrc.org**
 - *[I] needed a solution that would quickly and reliably conduct image processing for Parkinson's research. [I] found the NITRC Computational Environment (NITRC-CE) on AWS Marketplace, reducing time required to process neuroimaging data by 85%....allow[ing] me to complete a critical stage of my research in 2 days, instead of 2 weeks.*
 - *[NITRC] has greatly reduced the cost of managing [our] software development, and it has been an incredible resource for sharing resources with collaborators around the world.*

◆ Accelerating Scientific Progress

- NITRC has become the first choice for neuroscience researchers to find neuroimaging tools and share data and resources (*1000 functional connectomes*)
- Labs spend less time searching for and developing lab-specific software
- Universities rely on NITRC's services, storage, and uptime
- Time and resources are redirected towards basic research

◆ Optimizing Techniques

- Mixing and matching best-of-breed tools promotes maximum power to detect biological signals

◆ Promoting Reproducible Science

- Community access to data and tools
- Independent confirmation and strengthened impact of results

◆ NIH and Other Neuroscience Initiative Interoperability

- NIF, Biositemaps, and INCF

- ◆ **Saves Valuable Research Time**
 - Researchers saved time searching the Internet or developing redundant tools by finding the right neuroimaging tools on NITRC due to its search structure, meta-tags, ratings and reviews, and developer contact database
- ◆ **Useful for Research**
 - Researchers found neuroimaging tools on NITRC for use in their research and have published as a result
- ◆ **Saves Infrastructure Funds**
 - By using NITRC infrastructure for tool development, collaboration, or distribution, lab chiefs save money and time, thus redirect those finite resources to research
 - the NITRC community collaborates internationally and across university and institute lines

Monthly Stats based on 3Q14

- 22,099 sessions
- 12,025 users
- 81,284 pageviews
- 3.68 pages/visit
- 3 min. and 39 sec.
avg. time on site
- 46.3% new visitors
- Demographics: 34% US,
7.9% China, 6% UK,
Germany, 5% Canada,
4% Japan, 3% Italy, India,
Australia

Annual

- 282,505 sessions
- 142,449 users
- 1 million pageviews

Since July 2009 (5.5 years)

- 1 million sessions, 460,722
users, 4.2 million pageviews, 4.1
pages/visit, 3:42 avg. time on
site
- 10,733 registered users
- 718 publicly listed software
tools and resource projects
- 2.41 million software and data
downloads

Screen Shots of NITRC-R NITRC-IR and NITRC-CE





About NITRC

NIH funded the knowledge management web site, Neuroimaging Tools and Resources Clearinghouse (NITRC.org), to allow researchers to develop, share, and collaborate on software tools with the goal of eliminating duplicate funding for parallel research efforts. NITRC's Computational Environment (NITRC-CE) allows researchers to use Amazon's Elastic Compute Cluster (EC2) to compute against the federated data in NITRC's Image Repository or their own research data. Neuroscientists can quickly derive results by using our virtualized computing platform pre-configured with popular analysis tools and built on the NeuroDebian operating system.

NITRC

[Visit the NITRC Website](#)

NITRC Products (2)

-  **NITRC** **NITRC Computational Environment**
Free Tier Eligible ★★★★★ (3) | Version v0.30-all regions | Sold by [NITRC](#)
\$0.00/hr for software + AWS usage fees
NITRC-CE is a virtual computing platform pre-configured with many neuroimaging data analysis applications. NITRC-CE joins the family of successful NITRC services starting ...
Linux/Unix, Ubuntu 12.04 | 64-bit Amazon Machine Image (AMI)
-  **NITRC** **NITRC Computational Environment for Cluster Compute Instances**
Version v0.30 CC | Sold by [NITRC](#)
\$0.00/hr for software + AWS usage fees
NITRC-CE for Cluster Compute Instances provides the same virtual computing platform for neuroimaging data analysis as NITRC-CE but on high performance computing machines ...
Linux/Unix, Ubuntu 12.04 | 64-bit Amazon Machine Image (AMI)

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Search AWS Marketplace

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[▶ Your Software](#)

NITRC Computational Environment

Sold by: NITRC



NITRC-CE is a virtual computing platform pre-configured with many neuroimaging data analysis applications. NITRC-CE joins the family of successful NITRC services starting with the flagship, NITRC-Resources, the "go to" place for neuroimaging tools and resources. NITRC Image Repository offers a select set of community-generated neuroimaging data sets, while this service, NITRC Computational Environment, offers the convenience of cloud-based computing against NITRC-IR data sets or your data sets. We welcome any suggestions on how to improve this service to make it a user friendly tool for ... [Read more](#)

Customer Rating ★★★★★ (3 Customer Reviews)**Latest Version** v0.30-all regions (Other available versions)**Base Operating System** Linux/Unix, Ubuntu 12.04**Delivery Method** 64-bit Amazon Machine Image (AMI) ([Learn more](#))**Support** [See details below](#)**AWS Services Required** Amazon EC2, Amazon EBS

- Highlights**
- Need resources on demand to compute against your neuroimaging data? Tired of fighting for institutional compute resources and just need to get the compute done? Use NITRC-CE!
 - Need access to the most popular neuroimaging analysis tools? Each release has more of the most popular neuroimaging tools, check our User Guide for a complete listing of installed packages. Use these resources separately, or pipeline them; we're agnostic!
 - Need access to the most popular community-generated and curated neuroimaging analysis data sets? Access

Continue

You will have an opportunity to review your order before launching or being charged.

Pricing Details

For region **US East (Virginia)**

Free Tier Eligible

This product can be used for free on a Micro instance for up to 750 hours per month if you qualify. See details.

Hourly Fees

Total hourly fees will vary by instance type and EC2 region.

EC2 Instance Type	Software	EC2	Total
Standard Micro (t1.micro)	\$0.00/hr	\$0.02/hr	\$0.02/hr
Standard Small (m1.small)	\$0.00/hr	\$0.06/hr	\$0.06/hr
Standard Medium (m1.medium)	\$0.00/hr	\$0.12/hr	\$0.12/hr
Standard Large (m1.large)	\$0.00/hr	\$0.24/hr	\$0.24/hr
Standard XL (m1.xlarge)	\$0.00/hr	\$0.48/hr	\$0.48/hr
High-Memory XL (m2.xlarge)	\$0.00/hr	\$0.41/hr	\$0.41/hr
High-Memory 2XL (m2.2xlarge)	\$0.00/hr	\$0.82/hr	\$0.82/hr
High-Memory 4XL (m2.4xlarge)	\$0.00/hr	\$1.64/hr	\$1.64/hr


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[Your Software](#)

NITRC Computational Environment for Cluster Compute Instances

Sold by: NITRC



NITRC-CE for Cluster Compute Instances provides the same virtual computing platform for neuroimaging data analysis as NITRC-CE but on high performance computing machines that offer high bandwidth, low latency networking, and very high compute capabilities. NITRC-CE joins the family of successful NITRC services starting with the flagship, NITRC-Resources, the "go to" place for neuroimaging tools and resources. NITRC Image Repository offers a select set of community-generated neuroimaging data sets, while this service, NITRC Computational Environment, offers the convenience of cloud-based computing ... [Read more](#)

Customer Rating [Be the first to review this product](#)

Latest Version v0.30 CC

Base Operating System Linux/Unix, Ubuntu 12.04

Delivery Method 64-bit Amazon Machine Image (AMI) ([Learn more](#))

Support [See details below](#)

AWS Services Required Amazon EC2, Amazon EBS

- Highlights**
- Need resources on demand to compute against your neuroimaging data? Tired of fighting for institutional compute resources and just need to get the compute done? Use NITRC-CE!
 - Need access to the most popular neuroimaging analysis tools? Each release has more of the most popular neuroimaging tools, check our User Guide for a complete listing of installed packages. Use these resources separately, or pipeline them; we're agnostic!
 - Need access to the most popular community-generated and curated neuroimaging analysis data sets? Access

You will have an opportunity to review your order before launching or being charged.

Pricing Details

For region

Hourly Fees

Total hourly fees will vary by instance type and EC2 region.

EC2 Instance Type	Software	EC2	Total
Cluster GPU 4XL (cg1.4xlarge)	\$0.00/hr	\$2.10/hr	\$2.10/hr
Cluster Compute 8XL (cc2.8xlarge)	\$0.00/hr	\$2.40/hr	\$2.40/hr
Cluster High Memory 8XL (cr1.8xlarge)	\$0.00/hr	\$3.50/hr	\$3.50/hr
M3 XL (m3.xlarge)	\$0.00/hr	\$0.45/hr	\$0.45/hr
M3 2XL (m3.2xlarge)	\$0.00/hr	\$0.90/hr	\$0.90/hr

EBS Storage Fees

\$0.10 / GB / Month for Standard EBS Storage

Assumes On-Demand EC2 pricing; prices for [Reserved](#) and [Spot](#)

Instructions

Welcome to the NITRC Computational Environment (NITRC-CE), powered by [NeuroDebian](#).

For an up-to-date listing of NITRC-CE installed packages, go to: http://www.nitrc.org/nitrce_packages.

Please fill out the following form to configure your NITRC-CE instance. (You may use your NITRC web site credentials, but if you then change them on the web site, they will not be automatically updated on NITRC-CE.)

Choose a username

Choose a password

Repeat password

- Let NITRC anonymously know that you have started this AMI (one time for funding purposes)
- Periodically send anonymous usage statistics (for performance and funding purposes)
- If AWS instance is left running for hour(s), send email to

Or go [here](#) to use Amazon's billing alarm system.



Instructions

From this screen you can start a new NITRC-CE session if one is not already running, or you can connect to or end a NITRC-CE session that is already running. If you have any unsaved work in a session that is ended, it will be lost. If you are having problems connecting, [try these instructions](#) for connecting to NITRC-CE through your organization's firewall.

Start Session - Start a VNC session

Logout - Log out from NITRC-CE. (Note: This will not close your Amazon EC2 instance.)

Software License Status

[AFNI Status](#): **Installed** - [Freeware](#)

[Ants Status](#): **Installed** - [BSD License](#)

[DTIPrep Status](#): **Installed** - [BSD License](#)

[FreeSurfer Status](#): **License not installed** - [FreeSurfer License](#)

To update your FreeSurfer License, please [click here](#).

[FSL Status](#): **Installed** - [FSL License](#)

[ITK-SNAP Status](#): **Installed** - [GNU General Public License \(GPL\)](#)

[LONI Pipeline Server Status](#): **Installed** - [LONI Software License](#)

Launch a [Pipeline web start client](#) configured to use this server: [Launch](#)

[MRtrix Status](#): **Installed** - [GNU General Public License \(GPL\)](#)

[R Status](#): **Installed** - [GNU General Public License V2 \(GPL V2\)](#)

For a complete list, please go to: [User Guide - NITRC-CE Installed Packages](#)

Your session has been created.

Instructions

From this screen you can start a new NITRC-CE session if one is not already running, or you can connect to or end a NITRC-CE session that is already running. If you have any unsaved work in a session that is ended, it will be lost. If you are having problems connecting, [try these instructions](#) for connecting to NITRC-CE through your organization's firewall.

Your session is currently running. You may access it by directing a VNC client to **ec2-54-211-9-53.compute-1.amazonaws.com::5901** or with the "Connect" button below.

By connecting to the server, you agree to the licenses of the software listed below.

- Connect** - Connect to your existing session.
- End Session** - End your existing session.
- Logout** - Log out from NITRC-CE. (Note: This will not close your Amazon EC2 instance.)

Software License Status

- [AFNI](#) Status: **Installed** - [Freeware](#)
- [Ants](#) Status: **Installed** - [BSD License](#)
- [DTIPrep](#) Status: **Installed** - [BSD License](#)
- [FreeSurfer](#) Status: **License not installed** - [FreeSurfer License](#)
To update your FreeSurfer License, please [click here](#).
- [FSL](#) Status: **Installed** - [FSL License](#)
- [ITK-SNAP](#) Status: **Installed** - [GNU General Public License \(GPL\)](#)
- [LONI Pipeline Server](#) Status: **Installed** - [LONI Software License](#)



The screenshot shows the AWS Management Console interface on the left, displaying a list of instances. On the right, a terminal window displays the configuration for StarCluster, including sections for 'largecluster', 'microcluster', and 'micro_ce_cluster'.

```

# [cluster largecluster]
# Declares that this cluster uses mediumcluster as defaults
# EXTENDS=mediumcluster
# This section is the same as mediumcluster except for the following variables:
# CLUSTER_SIZE=16

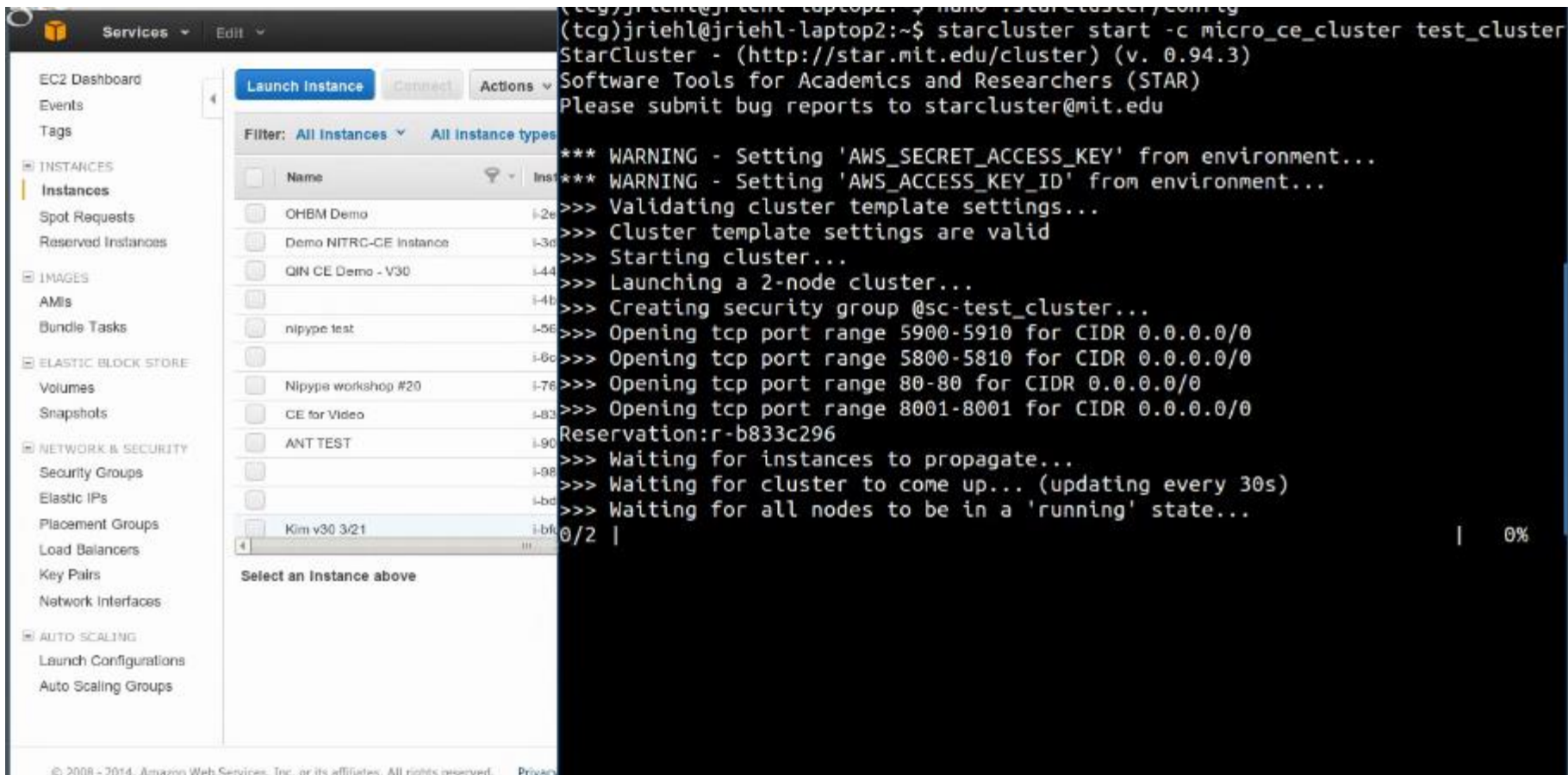
[cluster microcluster]
EXTENDS = smallcluster
NODE_INSTANCE_TYPE = t1.micro
# AVAILABILITY_ZONE = us-east-1a # Should be determined automatically
# based on the volume AZ (test_volume
# is in us-east-1a).
VOLUMES = test_volume

#####
[cluster micro_ce_cluster]
EXTENDS = microcluster
NODE_IMAGE_ID = ami-1ffedf76 # NITRC-CE v.31-a4 ami-1ffedf76
CLUSTER_USER = sgeadmin2
PERMISSIONS = http, vnc_1, vnc_2, loni_dps
DISABLE_QUEUE=True # Not ideal, but checking to see if setting this
# can avoid heartache when StarCluster would
# normally install SGE...

#####
[cluster micro_ce_cluster2]

```

- ◆ Python installer
- ◆ Runs on any local environment (Mac, Linux, Windows)

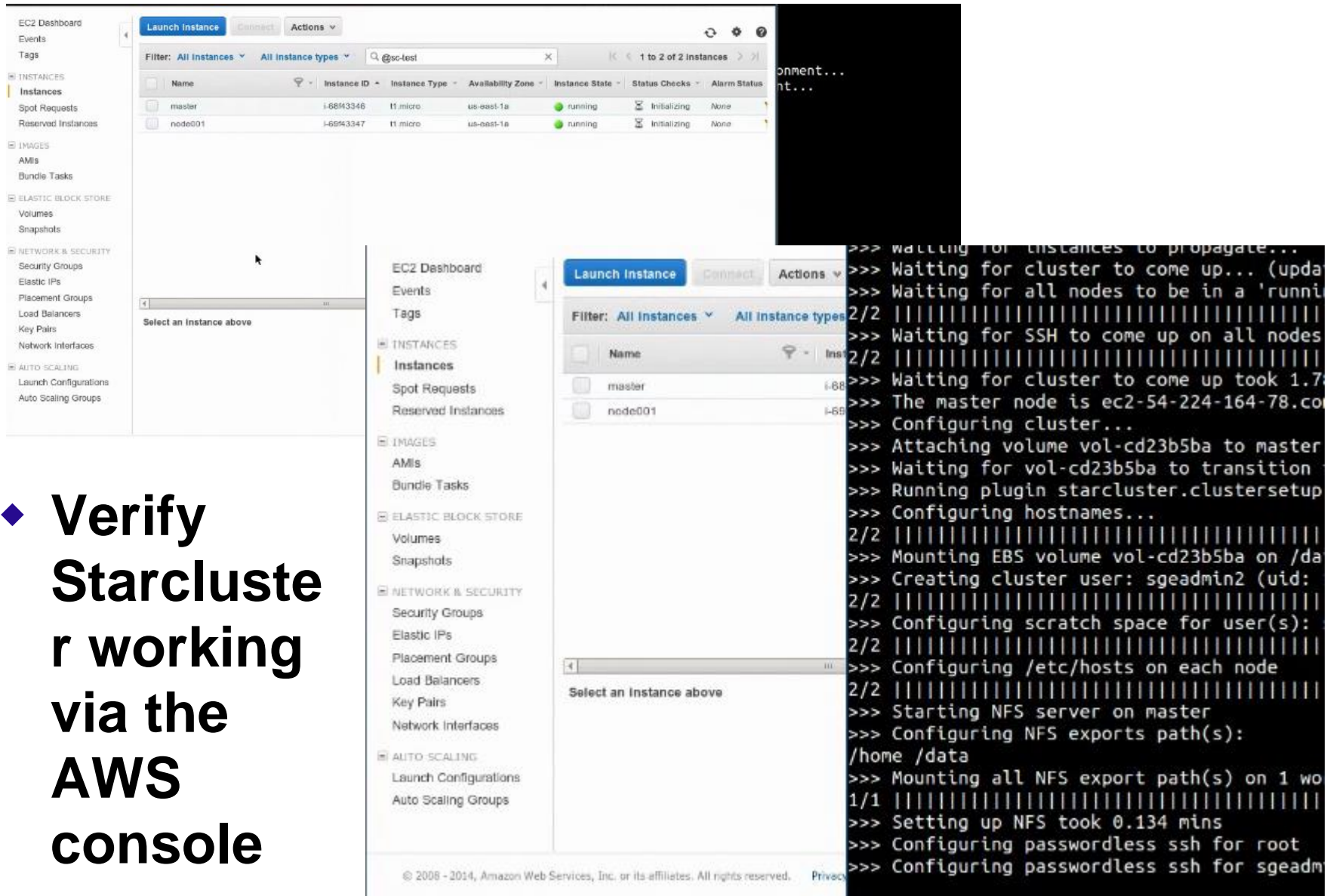


The screenshot shows the AWS Management Console on the left and a terminal window on the right. The terminal window displays the output of the `starcluster start` command, showing the process of starting a 2-node cluster.

```
(tcg)jrieh1@jrieh1-laptop2:~$ starcluster start -c micro_ce_cluster test_cluster
StarCluster - (http://star.mit.edu/cluster) (v. 0.94.3)
Software Tools for Academics and Researchers (STAR)
Please submit bug reports to starcluster@mit.edu

*** WARNING - Setting 'AWS_SECRET_ACCESS_KEY' from environment...
*** WARNING - Setting 'AWS_ACCESS_KEY_ID' from environment...
>>> Validating cluster template settings...
>>> Cluster template settings are valid
>>> Starting cluster...
>>> Launching a 2-node cluster...
>>> Creating security group @sc-test_cluster...
>>> Opening tcp port range 5900-5910 for CIDR 0.0.0.0/0
>>> Opening tcp port range 5800-5810 for CIDR 0.0.0.0/0
>>> Opening tcp port range 80-80 for CIDR 0.0.0.0/0
>>> Opening tcp port range 8001-8001 for CIDR 0.0.0.0/0
Reservation:r-b833c296
>>> Waiting for instances to propagate...
>>> Waiting for cluster to come up.. (updating every 30s)
>>> Waiting for all nodes to be in a 'running' state...
0/2 | 0%
```

- ◆ **Simple command line interface well documented**
- ◆ **<http://star.mit.edu/cluster/docs/latest/index.htm>**



The screenshot displays the AWS Management Console's EC2 Dashboard. Two instances are visible in the 'Instances' table:

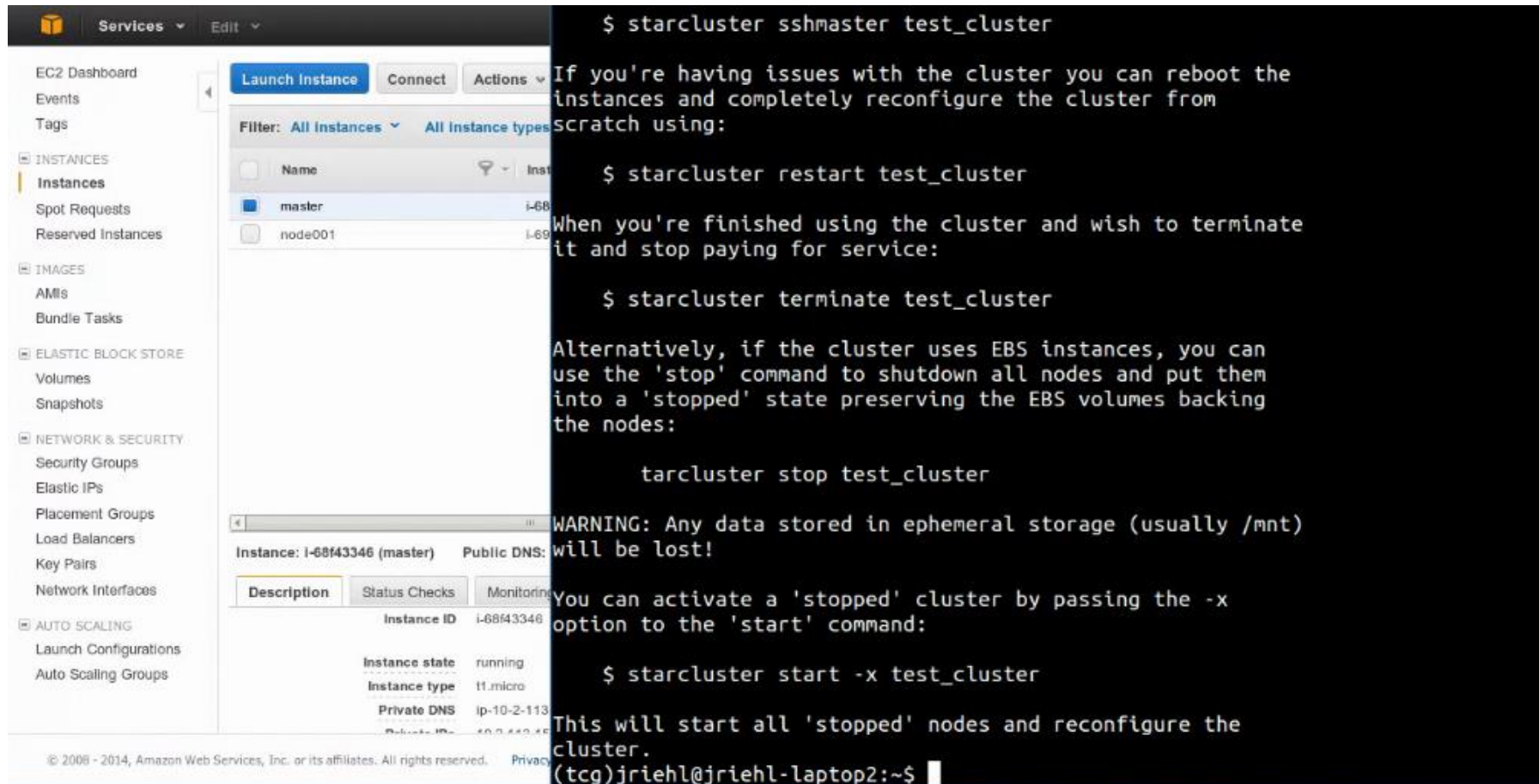
Name	Instance ID	Instance Type	Availability Zone	Instance State	Status Checks	Alarm Status
master	i-68f43346	t1.micro	us-east-1a	running	Initializing	None
node001	i-68f43347	t1.micro	us-east-1a	running	Initializing	None

Overlaid on the right side of the console is a terminal window showing the output of the StarCluster setup process. The logs include the following key steps:

```

>>> waiting for instances to propagate...
>>> Waiting for cluster to come up... (update)
>>> Waiting for all nodes to be in a 'running' state
2/2 |=====|
>>> Waiting for SSH to come up on all nodes
2/2 |=====|
>>> Waiting for cluster to come up took 1.77 mins
>>> The master node is ec2-54-224-164-78.compute-1.amazonaws.com
>>> Configuring cluster...
>>> Attaching volume vol-cd23b5ba to master
>>> Waiting for vol-cd23b5ba to transition to available
>>> Running plugin starcluster.clustersetup
>>> Configuring hostnames...
2/2 |=====|
>>> Mounting EBS volume vol-cd23b5ba on /data
>>> Creating cluster user: sgeadmin2 (uid: 1000)
2/2 |=====|
>>> Configuring scratch space for user(s): sgeadmin2
2/2 |=====|
>>> Configuring /etc/hosts on each node
2/2 |=====|
>>> Starting NFS server on master
>>> Configuring NFS exports path(s): /home /data
>>> Mounting all NFS export path(s) on 1 worker node
1/1 |=====|
>>> Setting up NFS took 0.134 mins
>>> Configuring passwordless ssh for root
>>> Configuring passwordless ssh for sgeadmin2
  
```

◆ **Verify Starcluster working via the AWS console**



The screenshot shows the AWS Management Console on the left and a terminal window on the right. The console displays a list of EC2 instances with 'master' and 'node001' selected. The terminal shows the following commands and their outputs:

```

$ starcluster sshmaster test_cluster

If you're having issues with the cluster you can reboot the
instances and completely reconfigure the cluster from
scratch using:

$ starcluster restart test_cluster

When you're finished using the cluster and wish to terminate
it and stop paying for service:

$ starcluster terminate test_cluster

Alternatively, if the cluster uses EBS instances, you can
use the 'stop' command to shutdown all nodes and put them
into a 'stopped' state preserving the EBS volumes backing
the nodes:

$ starcluster stop test_cluster

WARNING: Any data stored in ephemeral storage (usually /mnt)
will be lost!

You can activate a 'stopped' cluster by passing the -x
option to the 'start' command:

$ starcluster start -x test_cluster

This will start all 'stopped' nodes and reconfigure the
cluster.
(tcg)jriehl@jriehl-laptop2:~$
  
```

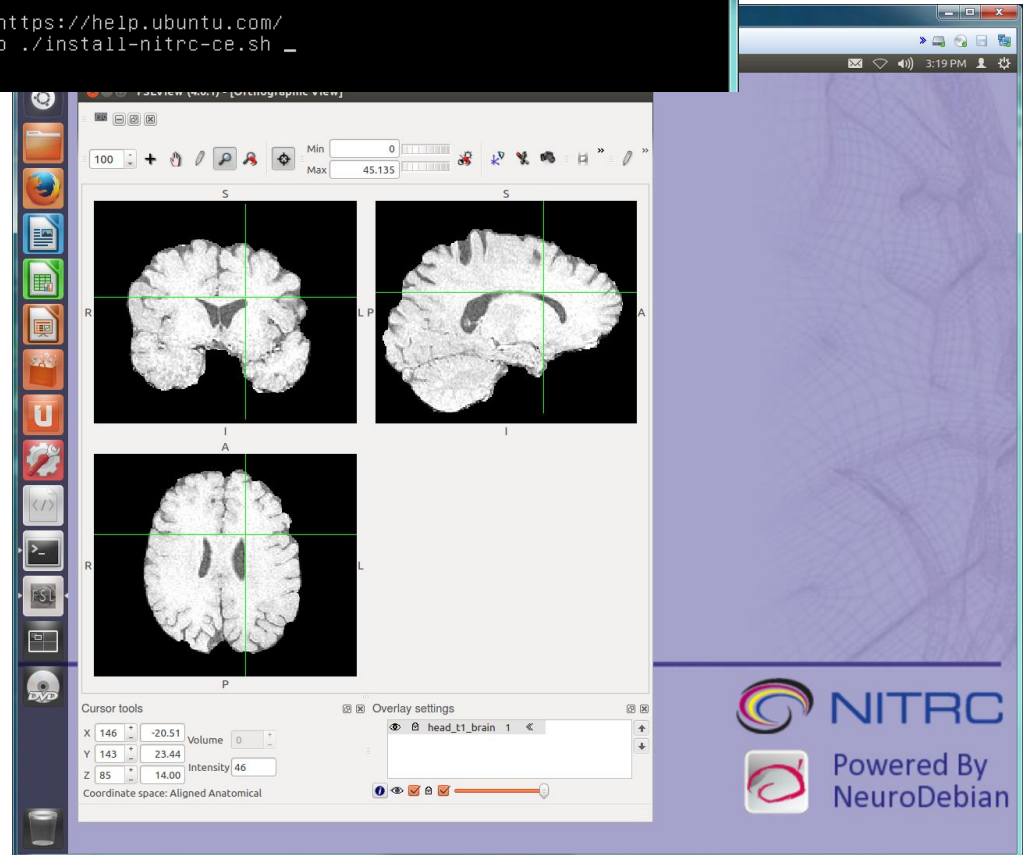
- ◆ **StarCluster at work!**
- ◆ **Next task to add neuroimaging software applications**

1. Plain Vanilla VMWare Ubuntu 12.04 (i.e., preparing to run our script)
2. VMware Player

```

Ubuntu 12.04.3 LTS ubuntu tty1
ubuntu login: butch
Password:
Last login: Mon Jan  6 15:25:45 EST 2014 on tty1
Welcome to Ubuntu 12.04.3 LTS (GNU/Linux 3.2.0-56-generic x86_64)

* Documentation:  https://help.ubuntu.com/
butch@ubuntu:~$ sudo ./install-nitrc-ce.sh _
    
```

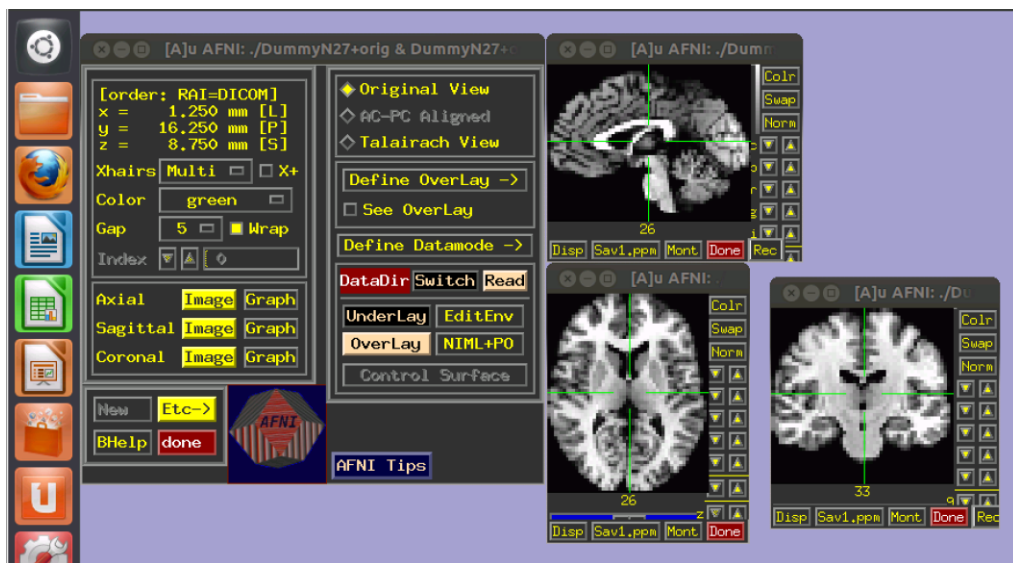
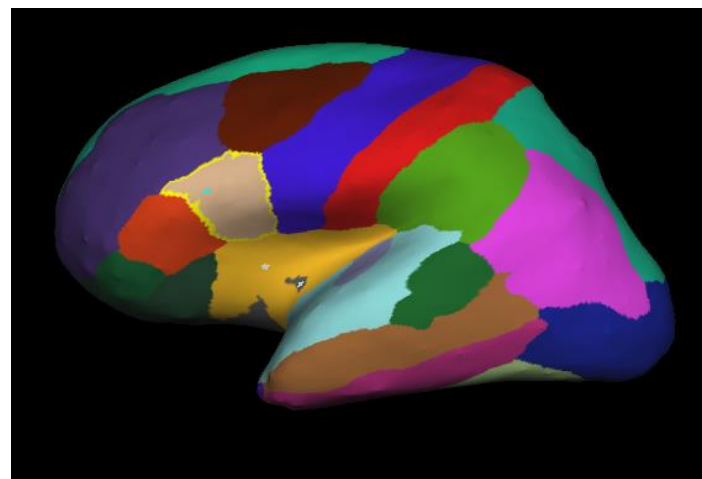
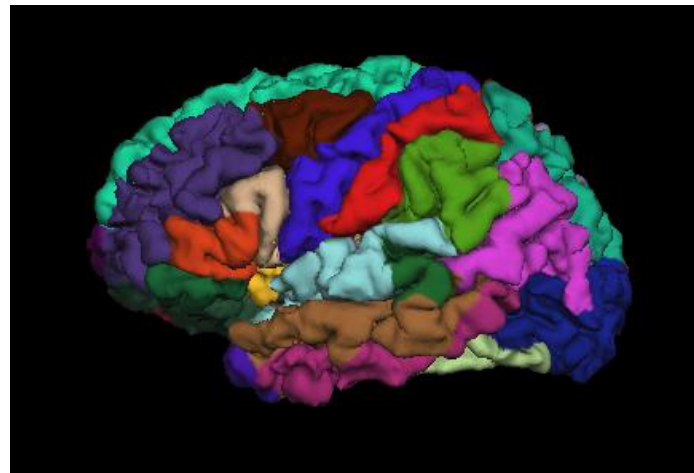
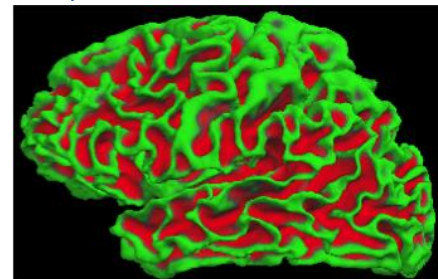
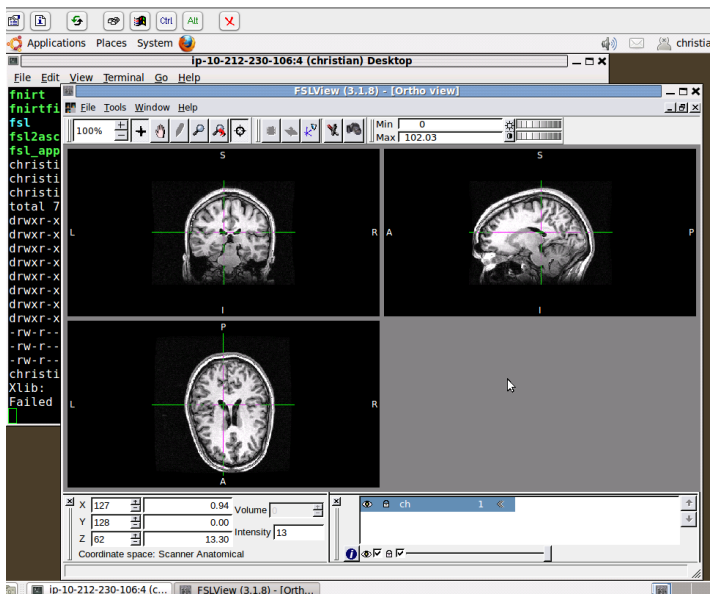




NITRC



Sample Views: FSL, FreeSurfer, AFNI



Server Personal

Module Groupings: NDAR S3 Test

Search

Server Library

- cranium.loni.usc.edu
- ec2-54-211-92-118.comput...
- Modules
 - AFNI
 - Automatic Registra...
 - BayesAss
 - DIRAC
 - EMBOSS
 - FSL
 - GAMMA
 - LONI
 - LONI DTI Suite
 - LONI Statistics
 - MINC
 - MSA
 - MIND
 - PCA Registration
 - Picard
 - SVPASEG
 - ShapeTools
 - Utilities

Input Data
ec2-54-211-92-118.compute-1.amazonaws.com

FSL BET (nii.gz)
FSL5
ec2-54-211-92-118.compute-1.amazonaws.com

FSL FIRST FLIRT (nii.gz)
FSL5
ec2-54-211-92-118.compute-1.amazonaws.com

FSL FIRST (nii.gz)
FSL5
ec2-54-211-92-118.compute-1.amazonaws.com

Search

Server Library

- cranium.loni.usc.edu
- ec2-54-211-92-118.co...
- Modules
 - AFNI
 - Automatic Regis...
 - BayesAss
 - DIRAC
 - EMBOSS
 - FSL
 - GAMMA
 - LONI
 - LONI DTI Suite
 - LONI Statistics
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 - MIND
 - PCA Registration
 - Picard
 - SVPASEG
 - ShapeTools
 - Utilities

Module Groupings: NDAR S3 Test

Search

Server Library

- cranium.loni.usc.edu
- ec2-54-211-92-118.co...
- Modules
 - AFNI
 - Automatic Regis...
 - BayesAss
 - DIRAC
 - EMBOSS
 - FSL
 - GAMMA
 - LONI
 - LONI DTI Suite
 - LONI Statistics
 - MINC
 - MSA
 - MIND
 - PCA Registration
 - Picard
 - SVPASEG
 - ShapeTools
 - Utilities

Input Data
ec2-54-211-92-118.compute-1.amazonaws.com

FSL BET (nii.gz)
Complete
1 job in 5 seconds

FSL FIRST FLIRT (nii.gz)
Complete
1 job in 439

FSL FIRST (nii.gz)
Complete
1 job in 1:46

FSL FSLMaths (nii.gz)

Execution Completed. (Duration: 7:27)
Show results

Bayesian Estimation of Diffusion Parameters Obtained using Sampling Techniques. Runs Markov Chain Monte Carlo sampling to build up distributions on diffusion parameters at each voxel necessary for running probabilistic tractography.

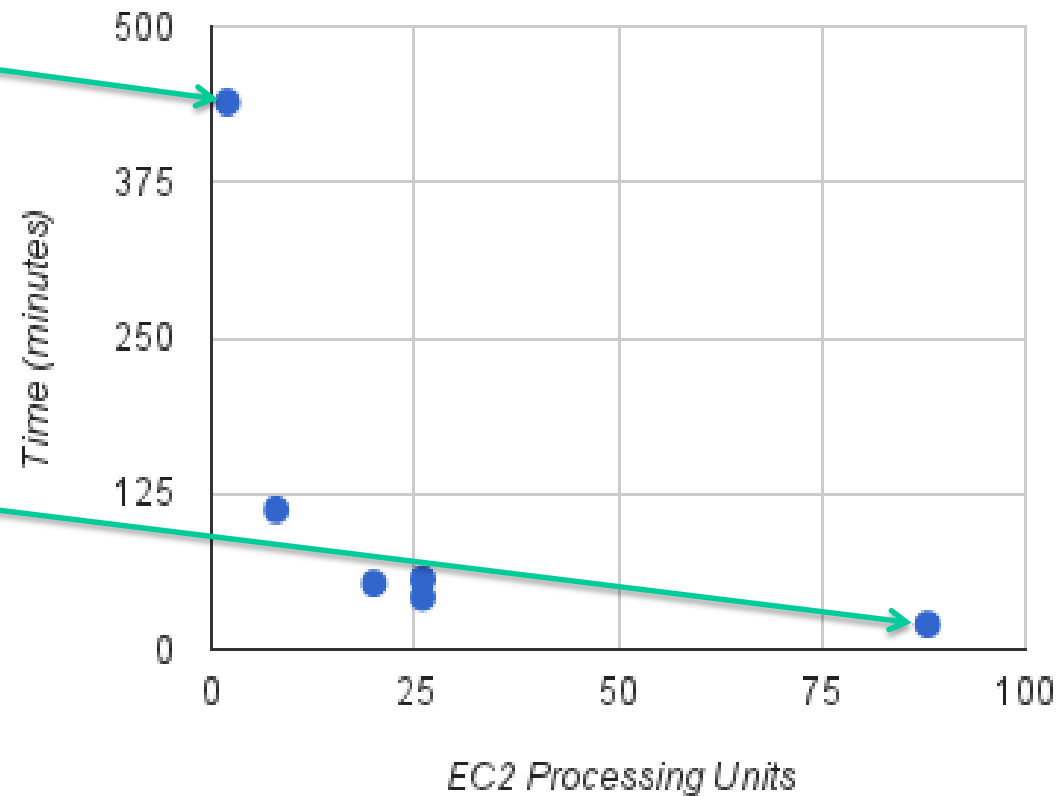
- ◆ **Data: DTI, 2.5mm³ spatial resolution, 32 diffusion directions, b=1000, 60 axial slices, acquisition time 6 min), TR = 9s, TE = 35ms**
- ◆ **Parallelization: FSL automatically distributes 'bedpostx' into "per slice" jobs and queues them to the SGE. (60 jobs in this case)**

FSL 'bedpostx' example - Processing Time: 5 hours 54 minutes (354 minutes) on 1 core desktop Mac...

m1.small, 1 Core, 2 EC2-PU
\$0.06/hour, 450 min, \$2.00

cc2.8xlarge, 16 Cores, 88 EC2-PU
\$3.06/hour, 20 min, \$3.06

Processing Time vs. EC2 Performance Units



FSL 'VBM'

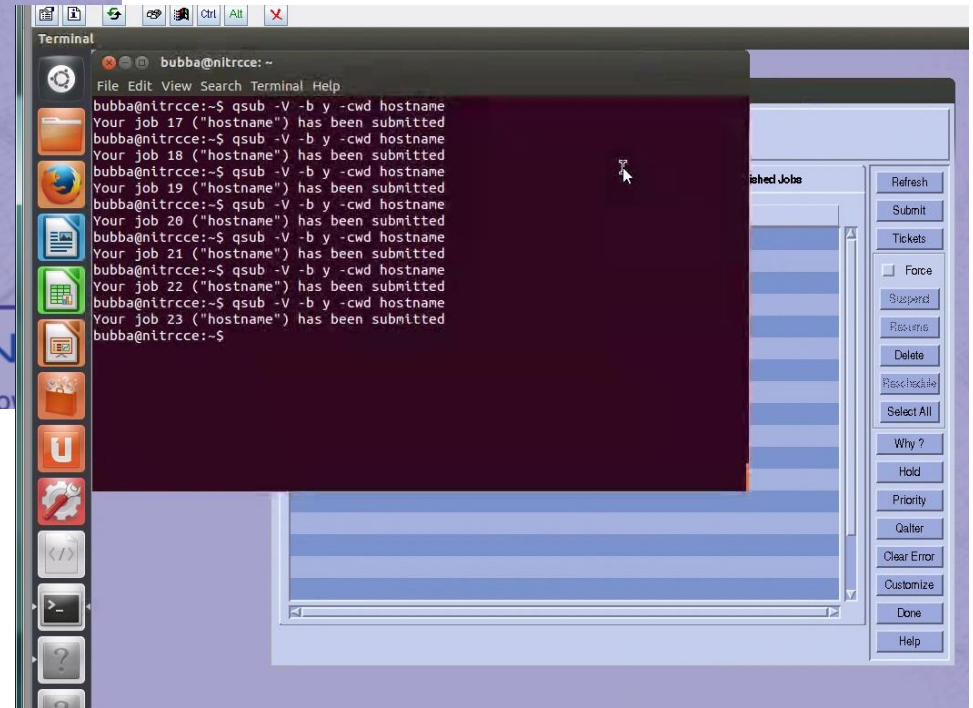
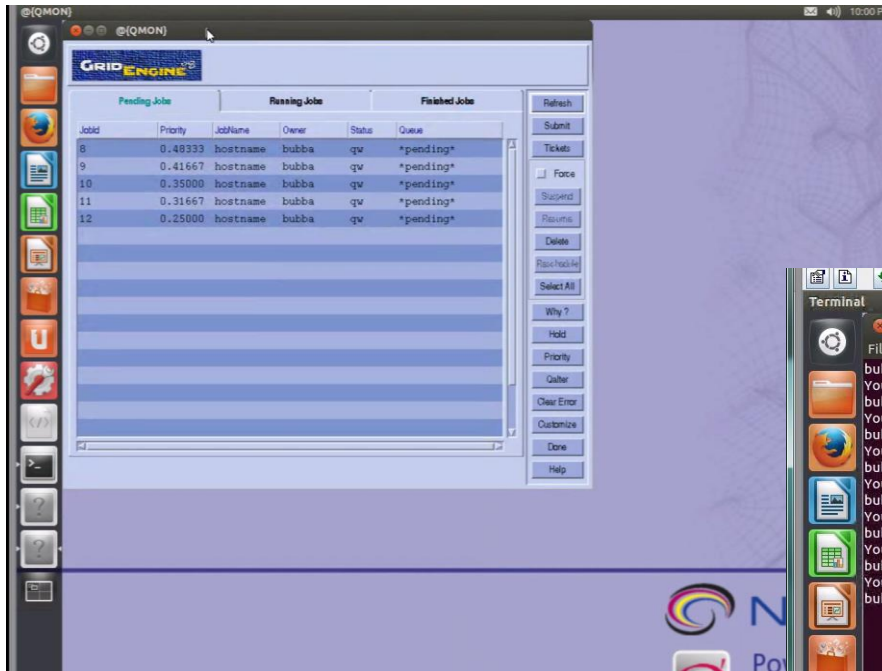
- ◆ **Data: 103 subjects T1**
- ◆ **Parallelization: FSL will automatically parse the template registration steps into 'per subject' jobs and submit to SGE**
- ◆ **Processing Time:**
- ◆ **m1.8xlarge (8 cores)**
- ◆ **Cost: \$20.00**

Freesurfer

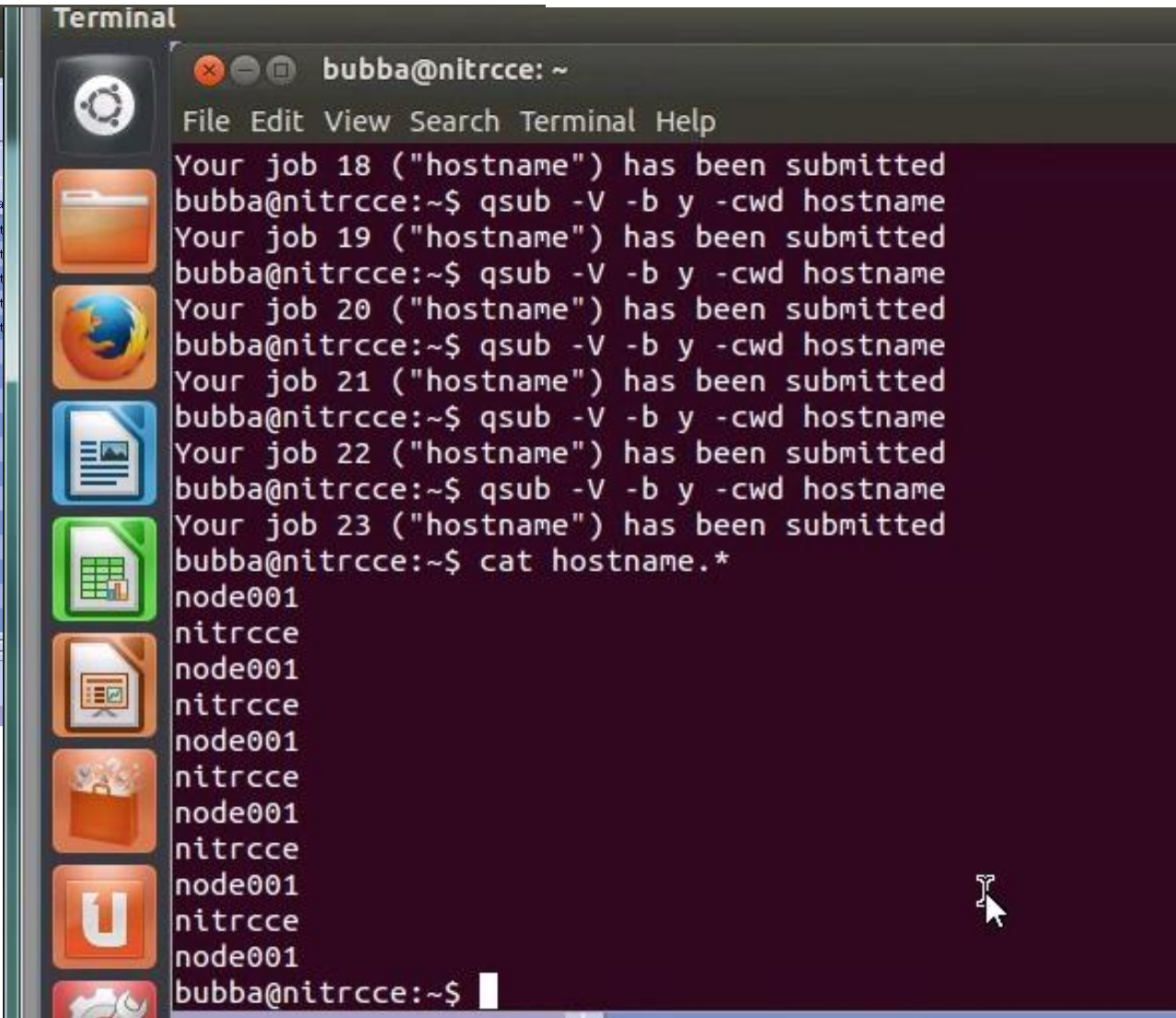
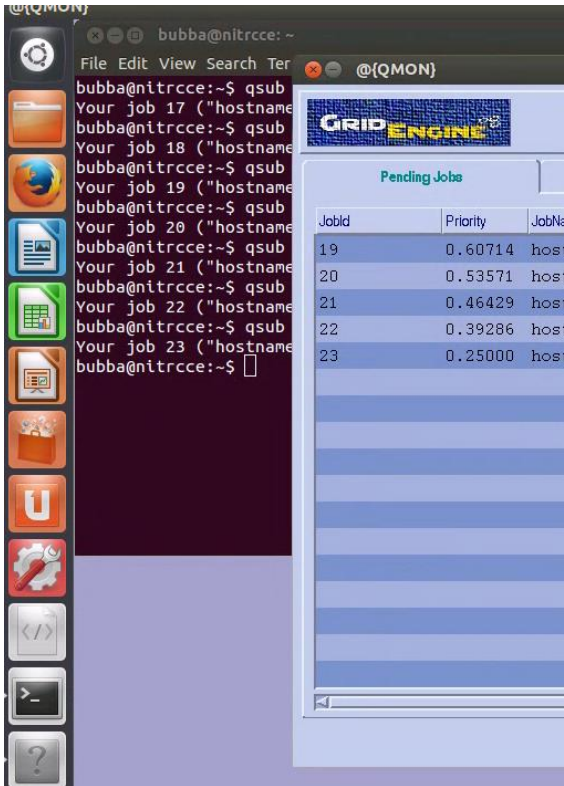
- ◆ **Data: ABIDE MPRAGE subjects**
- ◆ **Parallelization: None per subject, but can run a subject per instance/core for simultaneous execution on a population**

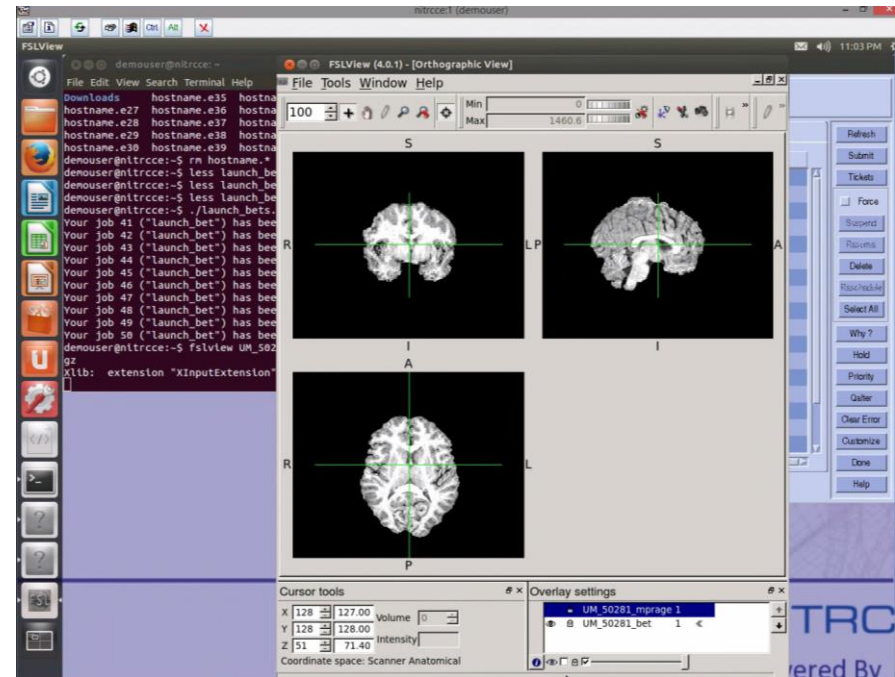
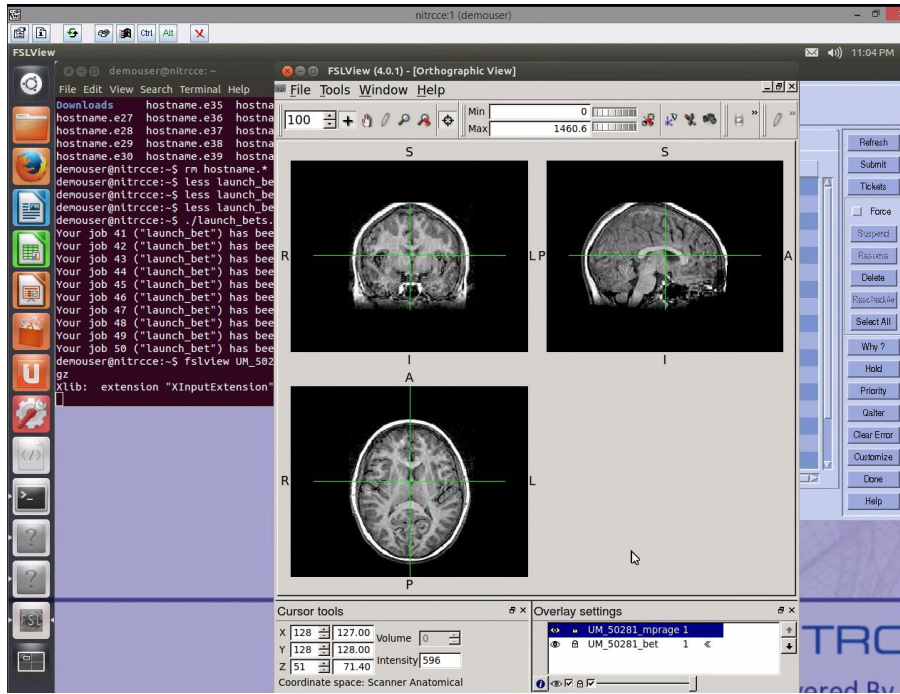
Cost/hr	0.24	0.6	0.45	2.4
Cores	2	8	4	32
ECU	4	28	13	108
Type	m1.large:	c3.2xlarge	m3.xlarge	c3.8xlarge
Time	34:48:00	10:33	9:50	10:33
Total cost 1	8.4	6.6	4.5	26.4
concurrent	2	8	4	32
cost per case	4.2	0.825	1.125	0.825





- ◆ Job submission
- ◆ Watching the jobs run





NITRC | CE Web Console User Account Shared Across Cluster

```

System information as of Fri Jan 10 21:57:53 UTC 2014

System load: 0.02      Processes:           98
Usage of /:  75.4% of 35.43GB  Users logged in:   0
Memory usage: 36%      IP address for eth0: 10.238.193.109
Swap usage:  0%

Graph this data and manage this system at:
https://landscape.canonical.com/

0 packages can be updated.
0 updates are security updates.

To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

bubba@node001:~$ ls
Desktop  Downloads  Music      Public     Videos
Documents  matlab    Pictures   Templates
bubba@node001:~$ touch newfile.txt
bubba@node001:~$
  
```

```

Terminal
bubba@nitrcce:~
File Edit View Search Terminal Help
bubba@nitrcce:~$ qsub -V -b y -cwd hostname
Your job 10 ("hostname") has been submitted
bubba@nitrcce:~$ qsub -V -b y -cwd hostname
Your job 11 ("hostname") has been submitted
bubba@nitrcce:~$ qsub -V -b y -cwd hostname
Your job 12 ("hostname") has been submitted
bubba@nitrcce:~$ qstat
job-ID prior name user state submit/start at queue
-----
7 0.50000 hostname bubba t 01/10/2014 21:59:00 myqueue@nitrcce
8 0.00000 hostname bubba qw 01/10/2014 21:59:00
9 0.00000 hostname bubba qw 01/10/2014 21:59:02
10 0.00000 hostname bubba qw 01/10/2014 21:59:04
11 0.00000 hostname bubba qw 01/10/2014 21:59:05
12 0.00000 hostname bubba qw 01/10/2014 21:59:07
bubba@nitrcce:~$
  
```

```

bubba@nitrcce: ~
Edit View Search Terminal Help
8 0.00000 hostname bubba qw 01/10/2014 21:59:00
1
9 0.00000 hostname bubba qw 01/10/2014 21:59:02
1
10 0.00000 hostname bubba qw 01/10/2014 21:59:04
1
11 0.00000 hostname bubba qw 01/10/2014 21:59:05
1
12 0.00000 hostname bubba qw 01/10/2014 21:59:07
1
bubba@nitrcce:~$ ls
top Downloads Music Pictures Templates
ments matlab newfile.txt Public Videos
bubba@nitrcce:~$ ls
top Downloads Music Pictures Templates
ments matlab newfile.txt Public Videos
bubba@nitrcce:~$ sudo qmon
j password for bubba:
protocol specified
protocol specified
r: Can't open display: :1
bubba@nitrcce:~$ xhost + localhost
localhost being added to access control list
bubba@nitrcce:~$
  
```

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- [[The IIT Human Brain Atlas \(v.3\)](#) • Jan 6 • [no comments](#)]
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- The Vaa3D version v2.865 (<http://vaa3d.org>) has been released on Dec 28, 2013. This software suite has powerful modules for 3D visualization and analysis of multi-dimensional images and surface objects. This new release includes several significant...
- [[Mister!](#) • Dec 18, 2013 • [no comments](#)]
- New version of Mister! released**
- Mister! 0.1.1 has been released! It includes a number of bug fixes and improvements. Builds are available for Linux (Redhat/Fedora/CentOS/Ubuntu/Debian), MacOS X and Windows.
- [[LORIS](#) • Dec 11, 2013 • [no comments](#)]
- New LORIS Release**
- There is now an installation guide available for the most recent version of LORIS, available through github. This release consists of over a year of updates, improvements and bug fixes and since it's released directly through our source control, will...
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sed

!! It includes a number of bug fixes and improvements. Builds are available for Linux (Ubuntu/Debian), MacOS X and Windows.

[[s\]](#)

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[[no comments](#)]

demo of NITRC-R, IR, and CE in the National Library of Medicine at the back of the Education Exhibits room, and of Medicine PubMed: Free Online Databases: Images and More" workshop...

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Showing 1-20 of 60 results

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1 | 2 | 3

3D Slicer
ABC (Atlas Based Classification)

ABC (Atlas Based Classification) is a comprehensive processing pipeline developed and used at University of North Carolina and University of Utah for brain MRIs. The processing pipeline includes image registration, filtering, segmentation and inhomogeneity correction. The tool is cross-platform and can be run within 3D Slicer or as a stand-alone program. The image segmentation algorithm is based on the EMS software developed by Koen van Leemput.

Category: [Segmentation](#) ([Show all specifications](#))


 Latest file: **2011-10-20**
 Activity: **17%**
 Downloads: **2202**
 Avg. overall:
aBEAT
Advanced Normalization Tools
AFNI
AHEAD
ALVIN - Lateral Ventricle Segmentation
AMILab

AMILab is an opensource software for image analysis, processing and visualization. It provides convenient visualization tools for 2D and 3D images and it is highly extensible through its own scripting language. At visualization level, AMILab includes a 2D/3D image viewer, a 3D polygon viewer based on OpenGL, a 2D Curve viewer to visualize 2D curves, histograms and color/opacity transfer functions, and a GPU-enabled raycasting script for Volume Rendering based on VTK. The software includes an automatic C++ wrapping system which permits fast development of new visualization tools and image processing algorithms. This wrapping system currently wraps about 200 classes from wxwidgets library and about 100 classes from VTK.

Category: [Active Contour](#), [Animation](#), [Artifact Removal](#), [Filtering](#), [Format Conversion](#), [Fourier Transform](#), [Intensity Contour](#), [Medial Axis](#), [Motion Analysis](#), [Quality Metrics](#), [Spline Interpolation](#), [Surface Rendering](#), [Two Dimensional Display](#), [Volume Rendering](#) ([Show all specifications](#))


 Latest file: **2011-12-07**
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Sort by:	3D Slicer	BrainVISA	BrainMask Volume Processing Tool	Biolmage Suite	BrainVoyager QX	Computational Morphometry Toolkit (CMTK)	BrainSuite	BrainSolution	BrainImageJava	BrainParser	AutoSeg
Downloads	Latest File: 2013-10-18 Activity: 80% Downloads: 4818 Avg. Overall: [Progress Bar]	Latest File: 2011-07-04 Activity: 73% Downloads: 4675 Avg. Overall: [Progress Bar]	Latest File: 2010-05-04 Activity: 61% Downloads: 4468 Avg. Overall: [Progress Bar]	Latest File: 2013-08-01 Activity: 71% Downloads: 3967 Avg. Overall: [Progress Bar]	Latest File: 2013-11-17 Activity: 58% Downloads: 3837 Avg. Overall: [Progress Bar]	Latest File: 2014-01-09 Activity: 100% Downloads: 2552 Avg. Overall: [Progress Bar]	Latest File: 2013-09-16 Activity: 33% Downloads: 1770 Avg. Overall: [Progress Bar]	Latest File: 2009-12-18 Activity: 31% Downloads: 1115 Avg. Overall: [Progress Bar]	Latest File: 2009-08-28 Activity: 0% Downloads: 1112 Avg. Overall: [Progress Bar]	Latest File: 2010-04-16 Activity: 0% Downloads: 1074 Avg. Overall: [Progress Bar]	Latest File: 2010-04-16 Activity: 0% Downloads: 1074 Avg. Overall: [Progress Bar]
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Domain	Domain CT MR PET/SPECT	Domain EEG/MEG/ECOG MR	Domain MR	Domain MR	Domain EEG/MEG/ECOG MR	Domain Domain Independent MR	Domain MR	Domain MR	Domain MR	Domain MR	Domain MR
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Intended Audience	Intended Audience Developers End Users	Intended Audience Developers End Users	Intended Audience End Users	Intended Audience Developers End Users	Intended Audience Developers End Users	Intended Audience Developers End Users	Intended Audience End Users	Intended Audience End Users	Intended Audience Developers End Users	Intended Audience End Users	Intended Audience Developers End Users
Natural Language	Natural Language English	Natural Language English French	Natural Language English	Natural Language English	Natural Language English	Natural Language English	Natural Language English	Natural Language English	Natural Language English	Natural Language English	Natural Language English
Operating System	Operating System Linux MacOS Windows	Operating System Linux MacOS Windows	Operating System Windows XP	Operating System BSD IRIX Linux MacOS SunOS/Solaris Windows NT/2000	Operating System Cygwin MacOS Windows Vista Windows XP	Operating System Cygwin Linux MacOS Other OS SunOS/Solaris Windows	Operating System Linux MacOS Windows NT/2000 Windows Vista Windows XP	Operating System Linux Windows NT/2000 Windows Vista	Operating System MacOS Windows	Operating System Linux Windows NT/2000 Windows Vista	Operating System Linux MacOS Windows
Pipelines and Workflows Supported	Pipelines and Workflows Supported	Pipelines and Workflows Supported	Pipelines and Workflows Supported	Pipelines and Workflows Supported	Pipelines and Workflows Supported	Pipelines and Workflows Supported	Pipelines and Workflows Supported	Pipelines and Workflows Supported	Pipelines and Workflows Supported	Pipelines and Workflows Supported	Pipelines and Workflows Supported
Programming Language	Programming Language C++ Python	Programming Language C++ Python	Programming Language C++	Programming Language C++ Tcl/Tk	Programming Language C++	Programming Language C C++	Programming Language C++	Programming Language C++ sh/bash	Programming Language Java	Programming Language C++ sh/bash	Programming Language C++

Computational Morphometry Toolkit (CMTK)



A software toolkit for computational morphometry of biomedical images, CMTK comprises a set of command line tools and a back-end general-purpose library for processing and I/O.

The command line tools primarily provide the following functionality: registration (affine and nonrigid; single and multi-channel; pairwise and groupwise), image correction (MR bias field estimation; interleaved image artifact correction; EPI unwarping), processing (filters; combination of segmentations via voting and STAPLE; shape-based averaging), statistics (t-tests; general linear model).

CMTK is implemented in C++ with parallel processing using POSIX Threads (SMP), OpenMP (SMP), Grand Central Dispatch (SMP), and CUDA (GPU).

Supported file formats include Analyze (r/w), NIFTI (r/w), Nrrd (r/w), DICOM (read), BioRad (read). Data exchange with other toolkits, such as ITK, FSL, AFNI, SPM, etc. is thus easily accomplished.



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3.0.0: CMTK-3.0.0-CYGWIN-i686.tar.gz (62M)

OR

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Specifications

Category: [Algorithm or Reusable Library](#), [Atlas Application](#), [Format Conversion](#), [Image Reconstruction](#), [Anatomic, Artifact Removal, Image-to-Image, Resampling, Warping, Principal Component Analysis, Linear, Two Dimensional Display, Workflow](#)

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NeuroDebian Package: [cmtk](#)

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Feb 18	Abstract submission deadline for 16th International Neuroscience Winter Conference 16th International Neuroscience Winter Conference April 8th - April 12th, 2014 (Solden, Austria)	
Mar 1	Application deadline for 19th Advanced Course in CNS (ACCN) 19th Advanced Course in CNS (ACCN (Frankfurt am Main, Germany))	

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<h4>Recently Active Forums</h4> <p>TumorSim: help RE: Input T1 - Output T1 have different intensity [25 posts, last post 2 hours ago]</p> <p>Vaa3D and Vaa3D-Neuron: help RE: Build APP2 in windows [840 posts, last post 4 hours ago]</p> <p>1000 Functional Connectomes Project: open-discussion RE: documentation of cogn. assessments [227 posts, last post 4 hours ago]</p> <p>WFU_PickAtlas: help RE: wfu_talright error [63 posts, last post 11 hours ago]</p> <p>NITRC Community: open-discussion RE: MNI study [1123 posts, last post 16 hours ago]</p>	<h4>Latest News</h4> <p>[Computational Morphometry Toolkit (CMTK) - Jan 10 - no comments] CMTK 3.0 released We are pleased to announce Release 3.0 of CMTK, the Computational Morphometry Toolkit (code name "Cambridge").</p> <p>[The IIT Human Brain Atlas (v.3) - Jan 6 - no comments] HOW TO update The document "HOW TO register DTI data to the IIT Human Brain Atlas (v.3) using DTI-TK" has been revised. The new HOW TO document includes an extra step that combines the affine and non-linear transformations in one, in order to accomplish transformation...</p> <p>[Vaa3D and Vaa3D-Neuron - Dec 20, 2013 - no comments] Vaa3D version 2.865 is released The Vaa3D version v2.865 (http://vaa3d.org) has been released on Dec 28, 2013.</p> <p>[Mistral - Dec 18, 2013 - no comments] New version of Mistral released Mistral 0.1.1 has been released! It includes a number of bug fixes and improvements.</p>
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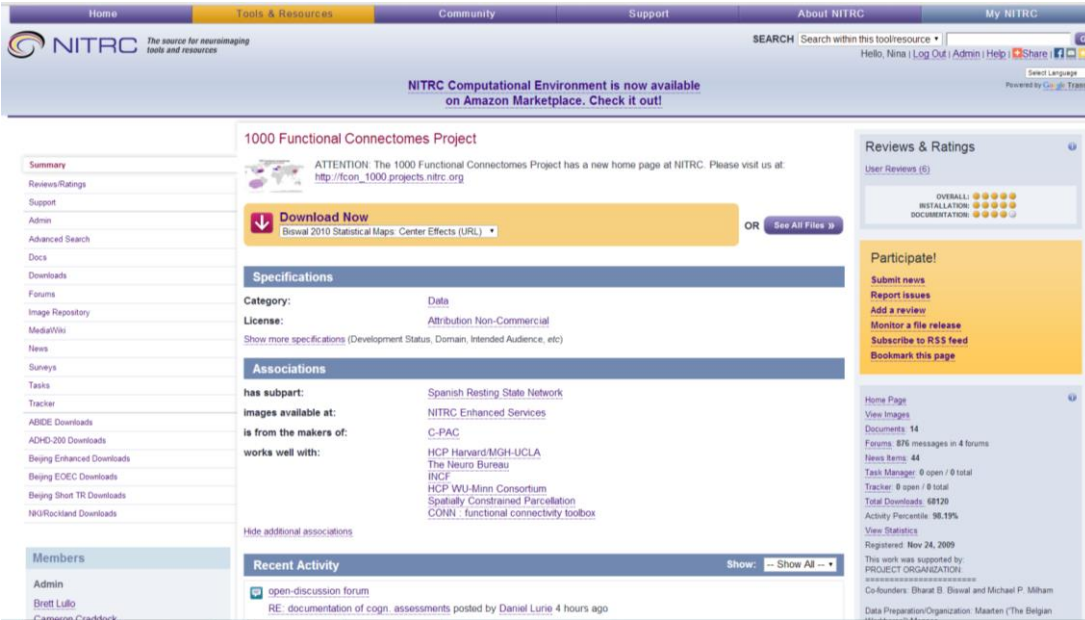
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ATTENTION: The 1000 Functional Connectomes Project has a new home page at NITRC. Please visit us at: http://fcon_1000.projects.nitrc.org

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images available at: NITRC Enhanced Services
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1000 Functional Connectomes Project

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Below is a list of all files for 1000 Functional Connectomes Project. Before downloading, you may want to read the Release Notes and ChangeLog (accessible by clicking on release name).

To create a new release click here.

Package: ABIDE <small>10 Subscribers</small>						
Release	Date	Filename	Size	DL	Arch	Type
No releases						

Package: Biswal 2010 - Statistical Maps <small>6 Subscribers</small>						
Release	Date	Filename	Size	DL	Arch	Type
Biswal 2010 Statistical Maps						
	2012-04-03 03:51					
		Age Effects (url)	130 KB	1,009	Any	
		Center Effects (url)	3.57 MB	311	Any	
		Group Maps (url)	4.27 MB	434	Any	
		Sex Effects (url)	148 KB	330	Any	

Package: Eta-squared-based clustering scripts, described in Kelly et al., 2012, A convergent functional architecture of the insula emerges across imaging modalities. <http://dx.doi.org/10.1016/j.neuroimage.2012.03.021> 3 Subscribers

Release	Date	Filename	Size	DL	Arch
Clusters					
	2012-03-26 10:30				
		IFC_cluster_numbers.png (url)	1.29 MB	452	Any
		insula_IFC_ROIs_README.txt (url)	2 KB	374	Any
		insula_IFC_ROIs.tar.gz (url)	165 KB	273	Any
Scripts					
	2012-03-26 10:28				
		eta_scripts_Mar2012.tar.gz (url)	6 KB	470	Any
		README.txt (url)	3 KB	693	Any

Package: fcon_1000 48 Subscribers

Release	Date	Filename	Size
Baltimore (Pekar, J.J./Mostofsky, S.H.; n = 23 [8M/15F]; ages: 20-40; TR = 2.5; # slices = 47; # timepoints = 123)			
	2009-12-11 04:10	Baltimore.tar (url)	1 GB
Bangor (Colcombe, S.; n = 20 [20M/0F]; ages: 19-38; TR = 2; # slices = 34; # timepoints = 265)			
	2009-12-11 04:00	Bangor.tar (url)	1 GB
Beijing_Zang (Zang, Y.F.; n = 198 [76M/122F]; ages: 18-26; TR = 2; # slices = 33; # timepoints = 225)			
	2009-12-11 03:50	Beijing_Zang_part1.tar (url)	2 GB
		Beijing_Zang_part2.tar (url)	2 GB
		Beijing_Zang_part3.tar (url)	2 GB
		Beijing_Zang_part4.tar (url)	1 GB
		Beijing_Zang_part5.tar (url)	2 GB
Berlin_Margulies (Margulies, D.; n = 26 [13M/13F]; ages: 23-44; TR = 2.3; # slices = 34; # timepoints = 195)			
	2009-12-11 03:40	Berlin_Margulies.tar (url)	1 GB
Cambridge_Buckner (Buckner, R.L.; n = 198 [75M/123F]; ages: 18-30; TR = 3; # slices = 47; # timepoints = 119)			
	2009-12-11 03:30	Cambridge_Buckner_part1.tar (url)	2 GB
		Cambridge_Buckner_part2.tar (url)	2 GB
		Cambridge_Buckner_part3.tar (url)	2 GB
		Cambridge_Buckner_part4.tar (url)	2 GB
Cambridge_Whitfield-Gabrieli (Whitfield-Gabrieli, S.; n = 39 [18M/20F/17]; ages: 20-32; TR = 2; # slices = 36; # timepoints = 145)			
	2009-12-11 03:20	Release_naming_IRR_approval (url)	

On behalf of the '1000 Functional Connectomes' Project, we are pleased to announce the unrestricted public release of 1200+ 'resting state' functional MRI (R-fMRI) datasets independently collected at 33 sites. All datasets have been generously donated by the principal investigators from the member sites, for the purpose of providing the broader imaging community complete access to a large-scale functional imaging dataset. [Age, sex and imaging center information](#) are provided for each of the datasets. In accordance with HIPAA guidelines, all datasets are anonymous, with no protected health information included. We anticipate this data-sharing effort will equip researchers with a means of exploring and refining R-fMRI approaches, and facilitate the growing ethos of sharing and collaboration.

Disclaimer: The '1000 Functional Connectomes Project' datasets are provided freely without assurance of quality or appropriateness for usage.

Baltimore	Bangor	Beijing_Zang	Berlin_Margulies
Pekar, J.J./Mostofsky, S.H. (n = 23 [8M/15F]; ages: 20-40; TR = 2.5; # slices = 47; # timepoints = 123)	Colcombe, S. (n = 20 [20M/0F]; ages: 19-38; TR = 2; # slices = 34; # timepoints = 265)	Zang, Y.F. (n = 198 [76M/122F]; ages: 18-26; TR = 2; # slices = 33; # timepoints = 225)	Margulies, D. (n = 26 [13M/13F]; ages: 23-44; TR = 2.3; # slices = 34; # timepoints = 195)
Download Baltimore Data	Download Bangor Data	Download Beijing_Zang Part 1 Download Beijing_Zang Part 2 Download Beijing_Zang Part 3 Download Beijing_Zang Part 4 Download Beijing_Zang Part 5	Download Berlin_Margulies Data
<small>[Download Baltimore Cox Preprocessed - Coming Soon]</small>	<small>[Download Bangor Cox Preprocessed - Coming Soon]</small>	<small>[Download Beijing_Zang Cox Preprocessed - Coming Soon]</small>	<small>[Download Berlin_Margulies Cox Preprocessed - Coming Soon]</small>
Cambridge_Buckner	Cleveland CCF	Dallas	Durham_Madden
Buckner, R.L. (n = 198 [75M/123F]; ages: 18-30; TR = 3; # slices = 47; # timepoints = 119)	Lowe, M.J. (n = 31 [11M/20F]; ages: 24-60; TR = 2.8; # slices = 31; # timepoints = 127)	Rypma, B. (n = 24 [12M/12F]; ages: 20-71; TR = 2; # slices = 31; # timepoints = 115)	Madden, D.J. (n = 42 [n/a]; ages: n/a; TR = n/a; # slices = n/a; X timepoints = n/a)
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ICBM	Leiden_2180	Leiden_2200	Leipzig
Evans, A.C. (n = 86 [41M/45F]; ages: 19-85; TR = 2; # slices = 23; # timepoints = 128)	Rombouts, S.A.R.B. (n = 12 [12M/0F]; ages: 20-27; TR = 2.18; # slices = 38; # timepoints = 215)	Rombouts, S.A.R.B. (n = 19 [11M/8F]; ages: 18-28; TR = 2.2; # slices = 38; # timepoints = 215)	Villringer, A. (n = 37 [16M/21F]; ages: 20-42; TR = 2.3; # slices = 34; # timepoints = 195)
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1000 Functional Connectomes Project

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Subjects

Subject	M/F	Hand	YOB	MR Sessions
AnnArbor_sub04111	U	R		1
AnnArbor_sub05580	F	U		1
AnnArbor_sub07921	F	U		1
AnnArbor_sub11043	F	U		1
AnnArbor_sub13636	M	R		1
AnnArbor_sub13959	M	R		1
AnnArbor_sub15846	F	U		1
AnnArbor_sub16960	M	R		1
AnnArbor_sub18546	M	U		1
AnnArbor_sub18698	M	R		1
AnnArbor_sub20317	M	R		1

Image Repository

PROJECT: fcon_1000 > AnnArbor_sub04111

Subject Details: AnnArbor_sub04111

Details Projects

Accession # xnat_S00001
Date Added 2011-06-06 04:44:48.0 (christian)
Birth year -
Gender Male
Handedness Right

Actions

- Edit
- View XML
- Add Experiment
- Download XML
- Email
- Manage Files
- Delete

Experiments

Date Experiment Deleted User

Date	Experiment	Deleted	User
MR Session	fcon_1000	AnnArbor_sub04111	

Image Repository

PROJECT: fcon_1000 > SUBJECT:AnnArbor_sub04111 > AnnArbor_sub04111

MR Session: AnnArbor_sub04111

Details Projects

Accession # xnat_E00001
Date Added 2011-06-06 04:44:48.0 (christian)
Acquisition Site: AnnArbor

Subject: AnnArbor_sub04111
Gender: Male
Handedness: Right
Age: 25

Actions

- Edit
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- Manage Files
- Delete

Scans

Scan	Type	Usability	Files	Note
AnnArbor_sub04111_anat_mprage_anonymized.nii.gz	mprage_anonymized			Show Counts
AnnArbor_sub04111_anat_mprage_skullstripped.nii.gz	mprage_skullstripped			Show Counts
AnnArbor_sub04111_func_rest.nii.gz	func_rest			Show Counts

Browser: xnat
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Label	Project	Subject	M/F	Age	Scans	Field Strength	Resting TR
AnnArbor_sub51248	fcon_1000	AnnArbor_sub51248	M	40	func_rest(1), mprage_anonymized(1), mprage_skullstripped(1)	3T	1.0
Berlin_sub49134	fcon_1000	Berlin_sub49134	M	44	func_rest(1), mprage_anonymized(1), mprage_skullstripped(1)	3T	2.3
Cleveland_sub07835	fcon_1000	Cleveland_sub07835	M	43	func_rest(1), mprage_anonymized(1), mprage_skullstripped(1)	3T	2.8
Cleveland_sub61868	fcon_1000	Cleveland_sub61868	M	48	func_rest(1), mprage_anonymized(1), mprage_skullstripped(1)	3T	2.8
Leipzig_sub47452	fcon_1000	Leipzig_sub47452	M	42			
Milwaukee_sub09931	fcon_1000	Milwaukee_sub09931	M	48	func_rest(1), mprage_anonymized(1), mprage_skullstripped(1)	3T	2.0
Milwaukee_sub17987	fcon_1000	Milwaukee_sub17987	M	47	func_rest(1), mprage_anonymized(1), mprage_skullstripped(1)	3T	2.0
Milwaukee_sub49975	fcon_1000	Milwaukee_sub49975	M	46	func_rest(1), mprage_anonymized(1), mprage_skullstripped(1)	3T	2.0
Milwaukee_sub67948	fcon_1000	Milwaukee_sub67948	M	48	func_rest(1), mprage_anonymized(1), mprage_skullstripped(1)	3T	2.0
Milwaukee_sub87910	fcon_1000	Milwaukee_sub87910	M	47	func_rest(1), mprage_anonymized(1), mprage_skullstripped(1)	3T	2.0
Milwaukee_sub91468	fcon_1000	Milwaukee_sub91468	M	44	func_rest(1), mprage_anonymized(1), mprage_skullstripped(1)	3T	2.0
NewHaven_sub21671	fcon_1000	NewHaven_sub21671	M	43	func_rest(2), mprage_skullstripped(1)	3T	1.0
NewHaven_sub26207	fcon_1000	NewHaven_sub26207	M	48	func_rest(2), mprage_skullstripped(1)	3T	1.0
NewHaven_sub31815	fcon_1000	NewHaven_sub31815	M	42	func_rest(4), mprage_skullstripped(1)	3T	1.5
NewHaven_sub55899	fcon_1000	NewHaven_sub55899	M	41	func_rest(2), mprage_skullstripped(1)	3T	1.0
NewYork_sub06021	fcon_1000	NewYork_sub06021	M	45	func_rest(1), mprage_anonymized(1), mprage_skullstripped(1)	3T	2.0
NewYork_sub10582	fcon_1000	NewYork_sub10582	M	47	func_rest(1), mprage_anonymized(1), mprage_skullstripped(1)	3T	2.0
NewYork_sub12486	fcon_1000	NewYork_sub12486	M	40	func_rest(1), mprage_anonymized(1), mprage_skullstripped(1)	3T	2.0
NewYork_sub14465	fcon_1000	NewYork_sub14465	M	47	func_rest(1), mprage_anonymized(1), mprage_skullstripped(1)	3T	2.0

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