



# ***Some Ibis Project Users***

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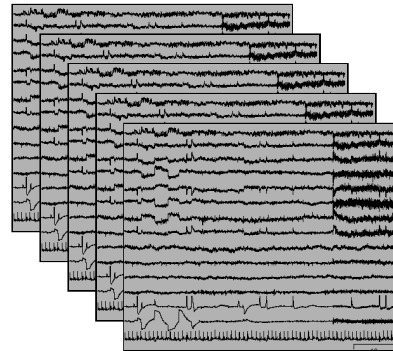
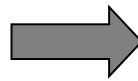
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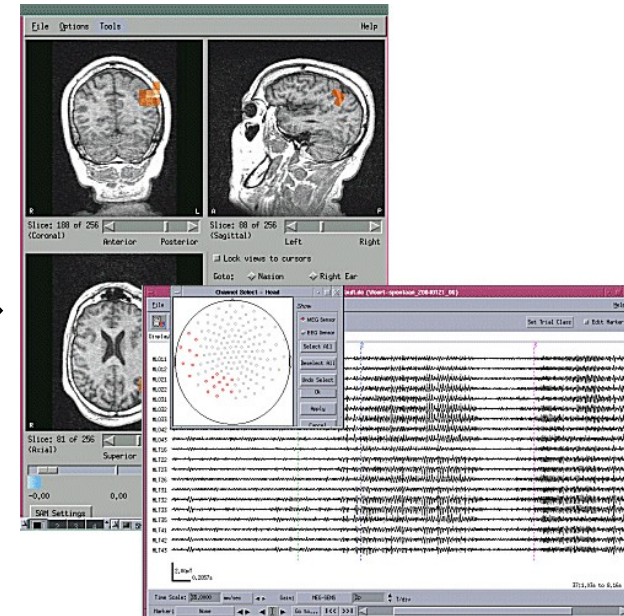
# VU Medical Center MEG Functional Imaging



Magneto  
Encephalography  
System (MEG)



MEG signals



Analysis tool for MEG data

*courtesy  
CTF MEG Systems*

*courtesy  
VUMC MEG Centrum*

- Reconstructs source of electrical currents in the human brain based on magnetic fields measured just above the scalp
- Multiple Sclerosis, Alzheimer, phantom pain



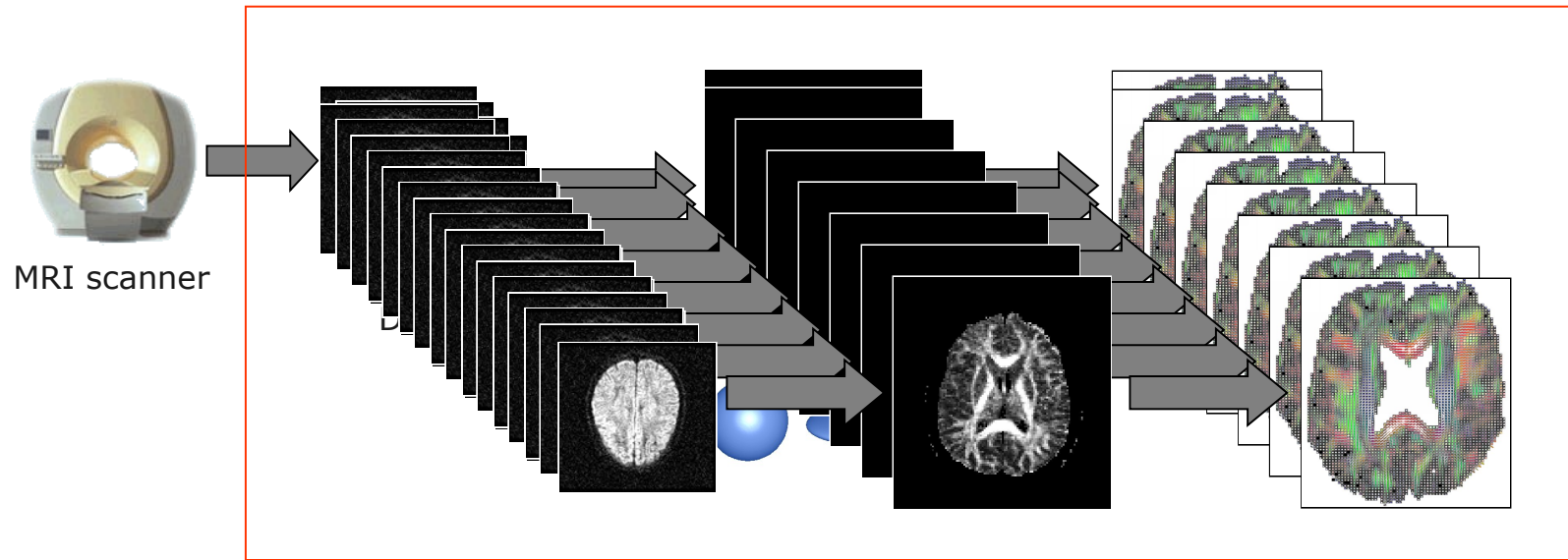
# ***VU Medical Center***

## ***MEG Functional Imaging***

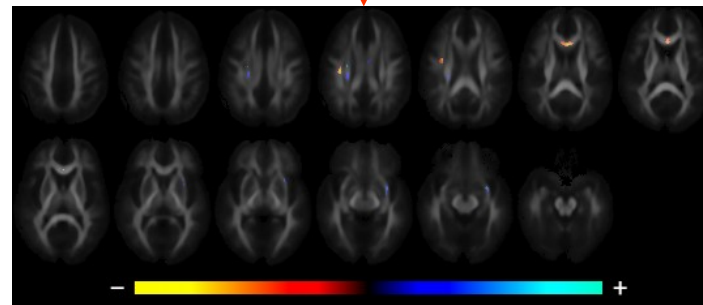
- Locating the sources of brain activation is computation intensive (fit data to model)
- Existing commercially available non-Java software from MEG International Services
- Test on local machine on test data set
- Full test on 340 data sets, 116 Gigabytes, would take several weeks
- Deploy to the grid to analyse scans of many patients in parallel
- Runs for a less than two hours
- Moved bottleneck from computation to medical doctors



# ***VU Medical Center / AMC: MRI DTI-based Population Studies***



*Courtesy of the AMC,  
TU Delft, Matthan Caan*



- Diffusion Tensor Imaging
- Successful characterization of schizophrenic patients vs. controls



# ***VU Medical Center / AMC: MRI DTI-based Population Studies***

- New techniques to discriminate populations with pattern classification techniques
- Tract-based spatial statistics (TBSS) was used as an analysis tool.
- Image analysis is computation-intensive
- Existing non-Java software, FSL written mainly by FMRI Analysis Group, Oxford University, UK
- 3844 brains compared
- Sequentially, this would take 12 weeks 24/7
- Done in 1 weekend



# ***VU Medical Center Tools***

- Generic task farming framework based on scripting
  - Place executable in a directory
  - Place data set in directory
  - Parameter file
  - Use JavaGAT to run executable on all datasets
  - Monitor progress
  - Copy back all results and output
  - Security is of key importance
- Keith Cover from the VUMC wrote the framework himself!





# ***AMC: Vbrowser***

- Used by Medical Doctors
- Runs on their desktops, typically MS Windows
- Looks exactly like the windows explorer
- Browse through data files
  - Local disk
  - Hospital storage resource broker
  - The grid



# AMC: Vbrowser

The screenshot displays the VBrowser application window. The title bar shows the path: `VBrowser[0]:srb://piter.de.boer.vlenl@srb.grid.sara.nl:50000/VLENL/home/piter.de.boer.vlenl/fMRIstudy/phase-0.5.feats/report...`. The menu bar includes Location, Edit, View, Tools, Windows, and Help. The address bar shows the same path. Below the address bar are navigation icons (back, forward, up, down, home, stop) and a toolbar with icons for file operations. The left pane, titled 'Resource', shows a tree view of the file system. The right pane, titled 'CobraViewer', displays a 'FEAT Report'. The report includes the path `/scratch/195830.mu6.matrix.sara.nl/1166367815.43/new-p-0.5.feats/report.html`, the date 'Sun Dec 17 18:11:38 CET 2006', and a link to the 'Motion correction report' with details: (mean displacements: absolute=0.21mm, relative=0.05mm). Below this is a section for 'Thresholded activation images' with a color scale from 1.0 to 15.0. The main display area shows a grid of 12 axial brain slices with red activation clusters. The label 'zstat1 - C1 (contrast)' is visible above the grid.

Location: `srb://piter.de.boer.vlenl@srb.grid.sara.nl:50000/VLENL/home/piter.de.boer.vlenl/fMRIstudy/phase-0.5.feats/report.html`

**FEAT Report**

`/scratch/195830.mu6.matrix.sara.nl/1166367815.43/new-p-0.5.feats/report.html`  
Sun Dec 17 18:11:38 CET 2006

[Motion correction report](#) (mean displacements: absolute=0.21mm, relative=0.05mm)

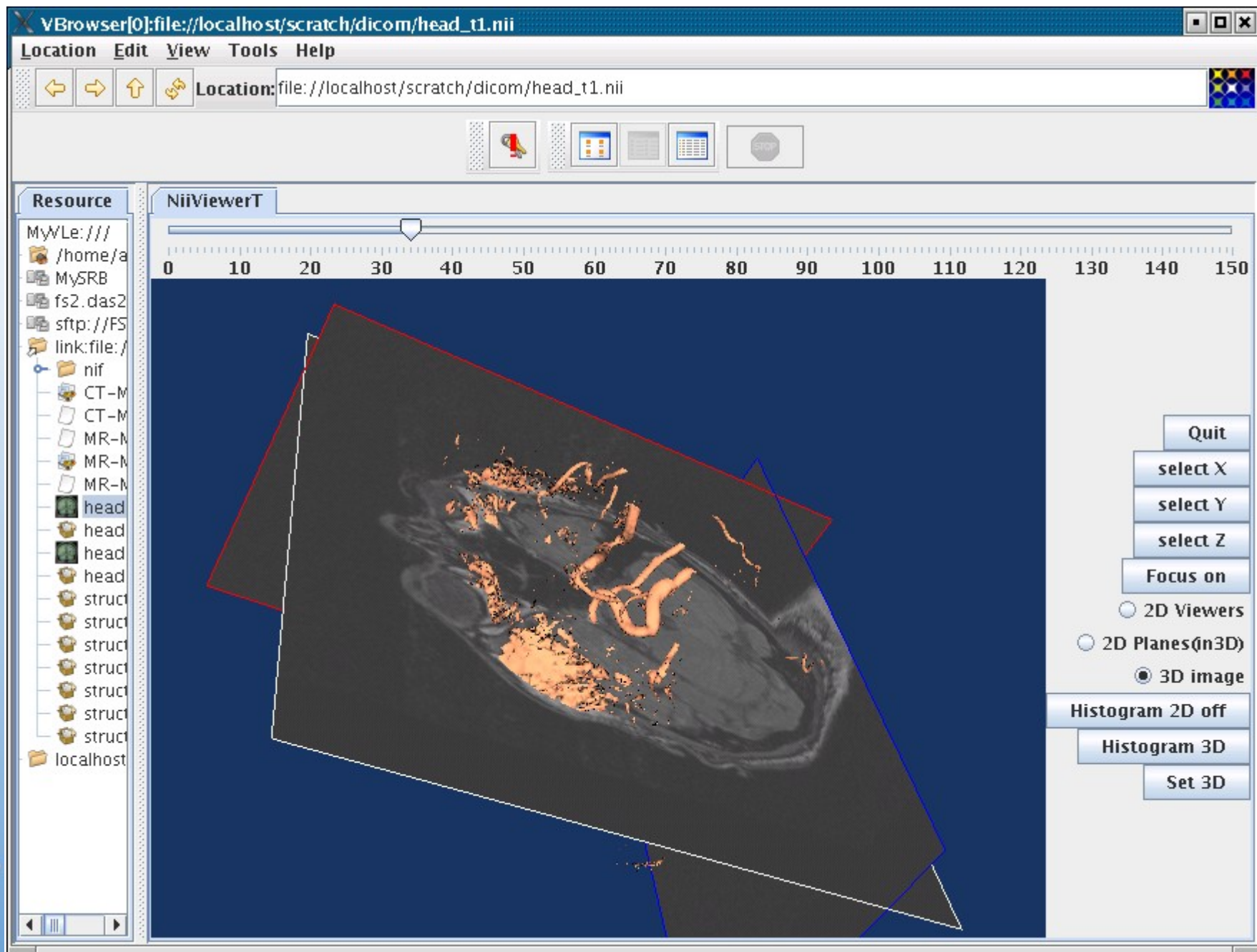
**Thresholded activation images** 1.0 15.0

zstat1 - C1 (contrast)





# AMC: Vbrowser



# ***D-Grid***

- Large German Grid project
  - HEP-Grid (High Energy Physics)
  - C3-Grid (Climate Research)
  - WISENT (Energy Meteorology)
  - InGrid (engineers)
  - TextGrid (Textual Research)
  - MediGrid (Medical Research)
  - AstroGrid (Astronomical Research)
- Several subprograms use JavaGAT
- D-Grid Integration Project provides official JavaGAT support for D-Grid
- **ProC workflow engine**





# ***Analyse data of Planck Satelite***

Analyse Cosmic Microwave Background

