

NA-MIC National Alliance for Medical Image Computing http://na-mic.org



NA-MIC for Image Post-Processing

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- National Alliance for Medical Image Computing (NA-MIC) is a National Center for Biomedical Computing (NCBC) and part of the NIH Roadmap Initiative (U54EB005149)
- Neuroimage Analysis Center, a national resource center, P41RR13218
- BIRN
- Several other funding sources



- Diagnostic Imaging produces data in increasing quantity and of increasing complexity
- Image computing is about extraction of relevant information from images



- Computational tools for image analysis (algorithms)
- Software engineering methods and applications for image analysis (tools)
- Application science (DBPs)



- Leadership:
 - BWH: Ron Kikinis, (Overall PI)
 - Steve Wong
- Core 1 Algorithms
 - Utah: Ross Whitaker (Core 1 PI)
 - MIT: Eric Grimson
 - UNC: Guido Gerig
 - MGH: Bruce Fischl, Dave Kennedy
 - GaTech: Allen Tannenbaum
- Core 2 Engineering
 - GE: Bill Lorensen (Core 2 PI)
 - Kitware: Will Schroeder
 - Isomics: Steve Pieper
 - UCSD: Mark Ellisman
 - UCLA: Art Toga
- Core 3 DBP
 - BWH: Martha Shenton
 - Dartmouth: Andy Saykin
 - UCI: Steve Potkin
 - UofT: Jim Kennedy

- Core 4 Service
 - Kitware: Will Schroeder
- Core 5 Training
 - MGH: Randy Gollub
- Core 6 Dissemination
 - Isomics: Steve Pieper, Tina Kapur
- Core 7 Management
 - BWH: Steve Wong



The NA-MIC Kit

- 3D Slicer: Plattform for delivering image analysis technology to end-users
- Several toolkits, other infrastructure, and methodologies
- Native support for several plattforms: Windows, Linux, OS X, Solaris





FOSS – A Public Highway...

- "NA-MIC kit" is like a Public Road System: FOSS, BSD style licenses
 - Provides Infrastructure for a Variety of Uses
 - Driveways can Lead to Anything:
 - a Public Park
 - a Private Facility

FOSS= Free Open Source Software



C TravelAlaska



Provided by Pieper, Kikinis



- Application for image analysis and data visualization
- Free Open Source Software available for Windows, Linux, Solaris and Mac OS X
- Supports a large number of image formats
- Google: slicer 101 for more information





File Vie	ew Help	Modules	
	Data	Volumes	Models
	Alignments	Editor	ModelMaker
More:		EMAtlasBrain	Classifier
Hala		amentation	Advanced
toete:		egmentation	Auvanced
1. Select	Input Channel	5:	
T1:	None		
T2:	None		
Align T2	to T1? On	Off	
		140	
2. Define	Parameter Se	ttings:	
Save Se	gmentation:	On Off	
Gernerat	e 3D Models:	On Off	
Working	Directory:	C:/slicer2.6-rd	2-win:
	Start Seg	mentation	





Rigid Registration











Non-Rigid Registration





Analysis of Tubular Structures

- Diffusion Tensor Imaging
- Automatic extraction of anatomically meaningful fiber bundles in the WM of the brain
- Cluster Analysis



Provided by Banks, Shenton, Kindleman, Westin, Bouix, et al.



Animal Imaging

Provided by Vosburgh et al.

And we do Stars too

Spectral data was converted to a velocity distribution from 0 to 20 km/s sampled into about 300 bins for both the ¹³CO (diffuse clouds) and $C^{18}O$ molecular



spectral lines National Alliance for Medical Image Computing (dense regionsorg

Provided by Halle, Borkin, Goodman



Development Methodology



National Alliance for Medical Image Computing http://na-mic.org



- Q: How well mapped are the NCBC's to the big problems and opportunities in computational biology?
- A: We do image analysis. Imaging is increasingly pervasive in biological sciences
- Q: What other scientific activities and programmatic initiatives are needed?
- A: Money dedicated to translation work. The current collaboration program has no dedicated funding.
- Q: What should the engineers and computer scientists who attend CSB get excited about and think about working on, in order to deliver and collaborate with the NCBCs?
- A: Learn about our capabilities. Use our software to solve your image analysis problems.



Project Overview

http://www.na-mic.org

• Day-to-Day:

http://wiki.na-mic.org

(Check out the NA-MIC kit link)