VISUAL BRAIN CORE

UAB

CORE DAY 2015 & Shared Resources

Mission

- Help produce high quality, cutting edge research examining the visual brain.
- Facilitate interactions among investigators through a regularly scheduled "methods" workshop, centered around the development and implementation of state-of-the-art methods for analysis of brain data.
- Help investigators overcome common barriers to performing high quality vision research by helping them to develop methods for computing strategies, storage, and back up for large data sets required by neuroimaging studies.
- Provide forums to discuss new ideas and research techniques.

Seminar Series

Visual Brain Core organizes a monthly seminar series **on the first Friday of each month at 3 30 PM, in CIRC 120** to discuss new ideas and research techniques related to imaging.

To bring expertise to UAB from other institutes, speakers are pioneers in their fields.

Seminars are followed by social time. This time is essential for discussing the ideas delivered by the speaker, brain storming, networking, building collaborations within the imaging community.

The topics and the speakers for these seminar series are selected through a voting system from our users, and depend on the research community interest. Our seminars are shared, through internet with neuroimaging colleagues at Auburn University as part of the Alabama Advanced Imaging Consortium. Some seminars are in person, while others involve interacting through video chat.

Examples of previous topics and speakers include:

- "Resting State Functional Connectivity: Methods, Databases and Clinical Applications" Susan Gabrieli, PhD, MIT.
- "Research Computing, Storage and Networks" Curtis Carver, PhD, VP of IT at UAB.
- "13C MRS Studies of Brain Metabolism of Alcohol and Acetate" by Graeme Mason, PhD, Yale School of Medicine.
- "High Gradient Diffusion MRI from the Human Connectome Project" Koene Van Dijk, PhD, Harvard Medical School.
- "Psychophysical Interactions (gPPI): What are they and What they can tell us" Donald McLaren, Phd, Harvard Medical School.

Services

• Weekly office hours to provide imaging and computing consultation for the research community at UAB.
  • Developing a forum to share research tools and knowledge for neuroimaging.
  • Computing tools are shared internationally among neuroimaging researchers. Learning to implement these tools and develop new ones is essential for cutting edge research, but requires a vibrant, collaborative neuroimaging community.
  • We provide dedicated time from experienced neuroimaging researcher, as well as a computer systems specialist.
• Monthly seminar series to discuss new ideas related to experimental design and analysis in imaging.
  • Essential to learn about new tools, and to foster the neuroimaging community.
• Use of visual presentation hardware and software for functional neuroimaging in the Highlands MRI suite.
  • Essential for presenting visual stimuli during neuroimaging experiments
• Develop a coherent framework to use high performance computing resources at UAB (Cheaha) for neuroimaging.
  • Essential for efficient processing of large neuroimaging datasets.
  • Help set up project work flows to efficiently process data.
 • Provide computer systems support

Neuroimaging Tools

Visual Brain Core computer systems support works in collaboration with UAB IT Research Computing to make neuroimaging tools available for the imaging researchers at UAB.

Support for the neuroimaging tools include installation, updating of these tools as well as providing consultation about using these tools in a cluster environment for high computing.

Conn toolbox v.13
FreeSurfer
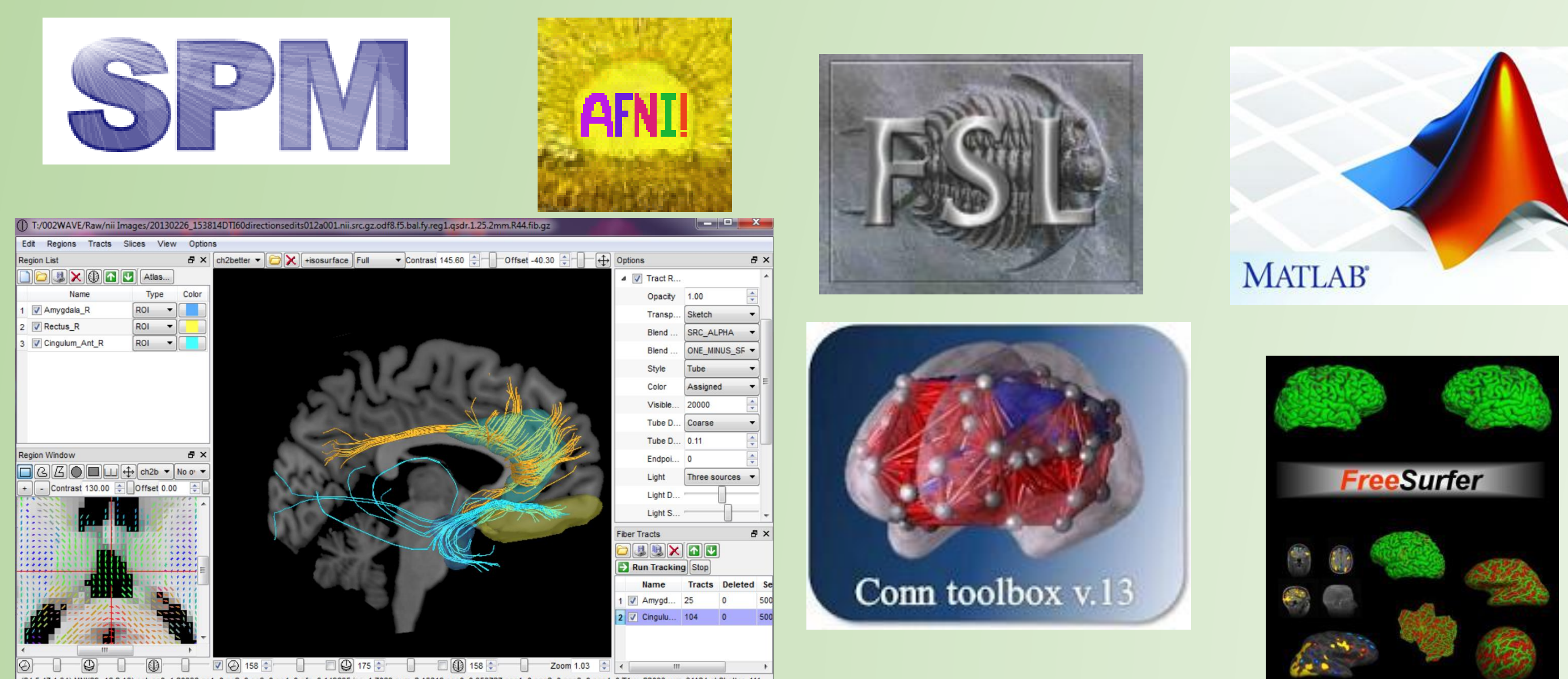
Computing Resources

UAB IT Research Computing maintains high performance compute and storage resources for investigators. The Cheaha compute cluster provides 1968 conventional CPU cores across five generations of hardware that provide over 50 TFLOP/s of combined computational performance, and 16 TB of system memory interconnected via an Infiniband network.

Research Computing System
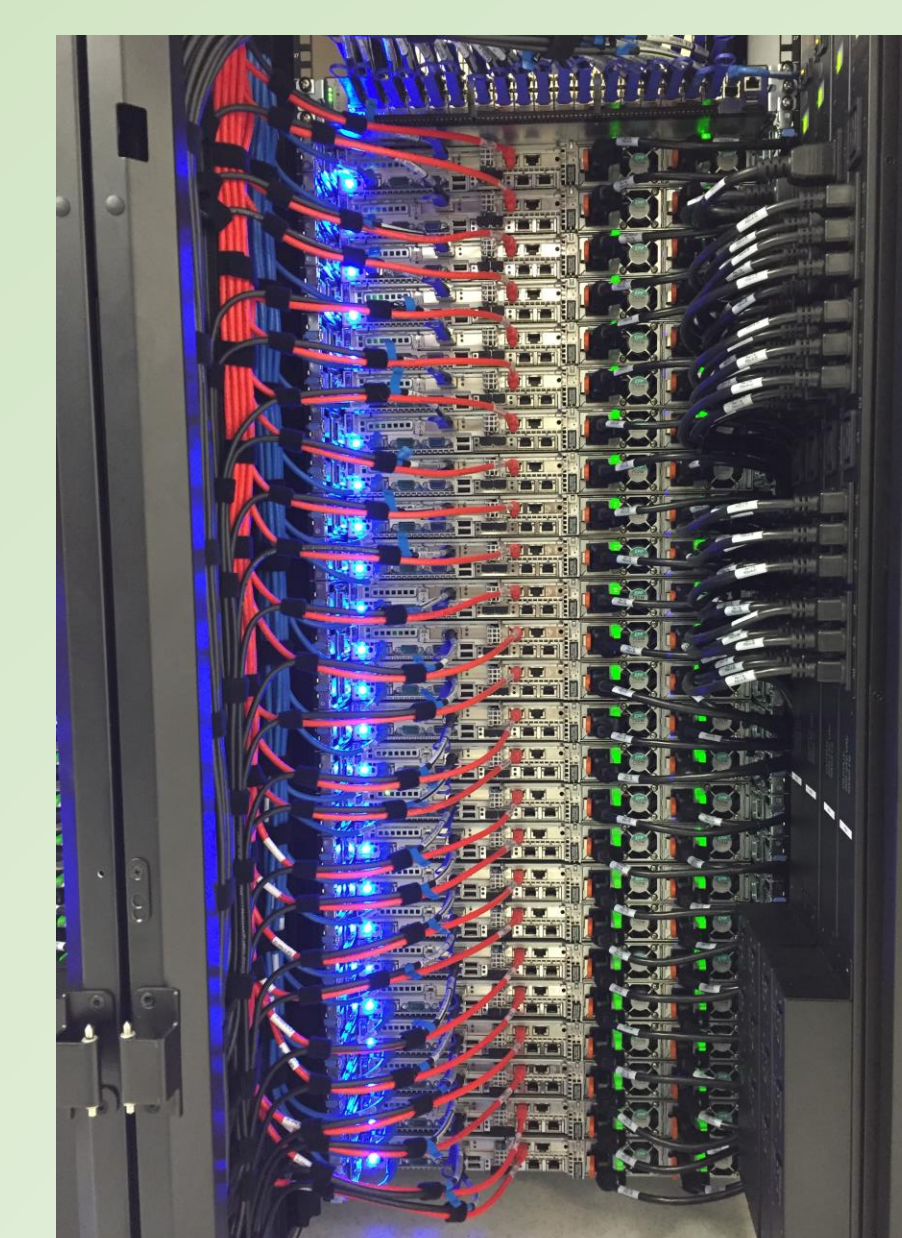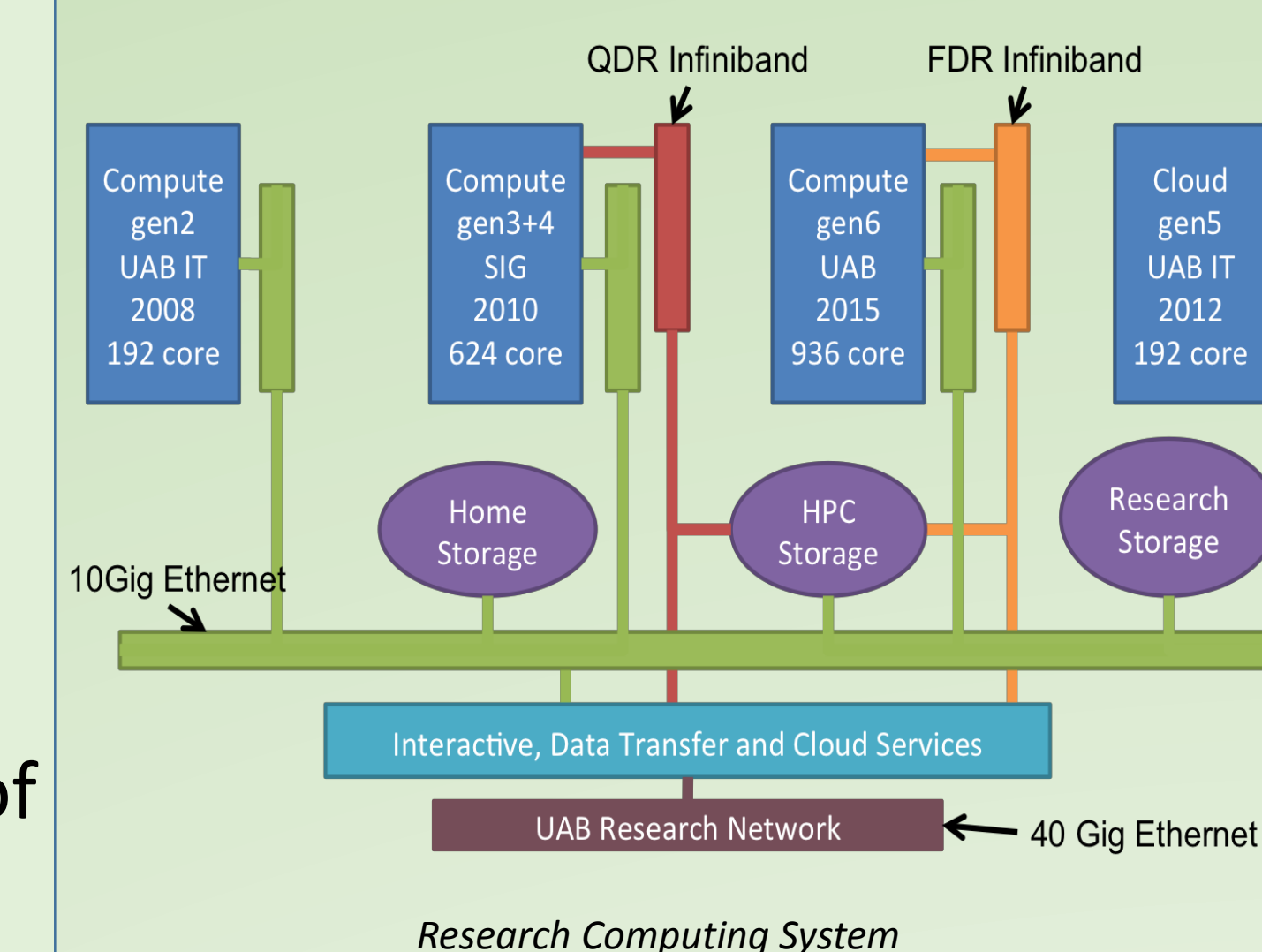
HPC with over 100 servers

Generation	Type	Nodes	CPUs per Node	Cores Per CPU	Total Cores	Clock Speed (GHz)	Instructions Per Cycle
Gen 2	Intel Xeon E5450	24	2	4	192	3.00	4
Gen 3	Intel Xeon X5650	48	2	6	576	2.66	4
Gen 4	Intel Xeon E5-2680	3	2	8	48	2.70	8
Gen 5	Intel Xeon E5-2650	12	2	8	192	2.00	8
Gen 6	Intel Xeon E5-2680 v3	40	2	12	960	2.50	16

Theoretical Peak Flops = (number of cores) * (clock speed) * (instructions per cycle)

Generation	Theoretical Peak Tera-FLOPS
Gen 2	2.304
Gen 3	6.129
Gen 4	1.036
Gen 5	3.072
Gen 6	38.40
Total TFLOPS	**50.94**

Office Hours

Location:
Civitan International Research Center, Room 235C

Hours:
Tuesday, 2:00 -5:00 pm, Thursday, 9:00 am-12:00 pm

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