

NITRD – Frontiers in Visualization

Hanspeter Pfister
Visual Computing Group
Harvard School of Engineering and Applied
Sciences

pfister@seas.harvard.edu

Visual Computing Group

Dr. Johanna Beyer
Dr. Ray Jones
Daniel Haehn
Dr. Verena Kaynig
Dr. Seymour K.-B.
Dr. Dequin Sun
Gaurav Bharaj
Michelle Borkin
Steffen Kirchhoff
Dr. Alexander Lex
Dr. Adi Peleg
Dr. Hendrik Strobelt
Fangyang Shen



Computer Graphics



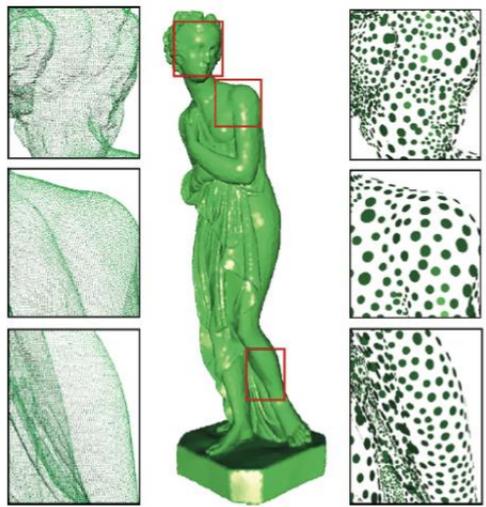
Image & Video Processing



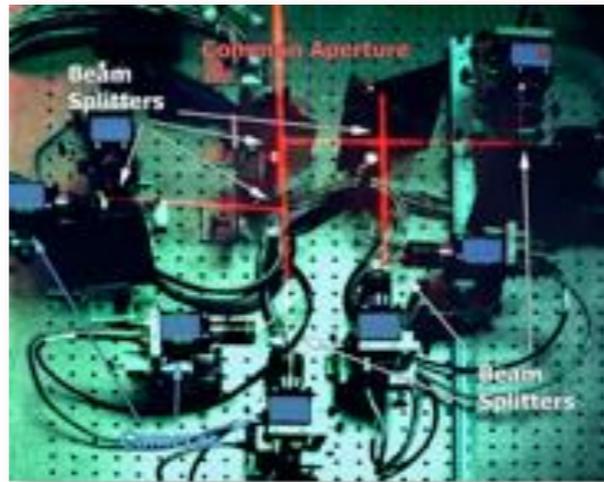
Face Modeling



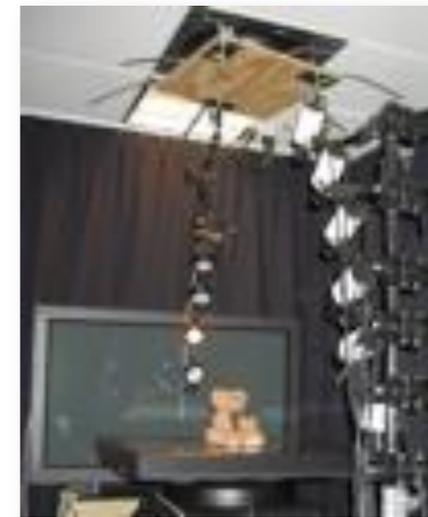
Computational Fabrication



Point-Based Graphics

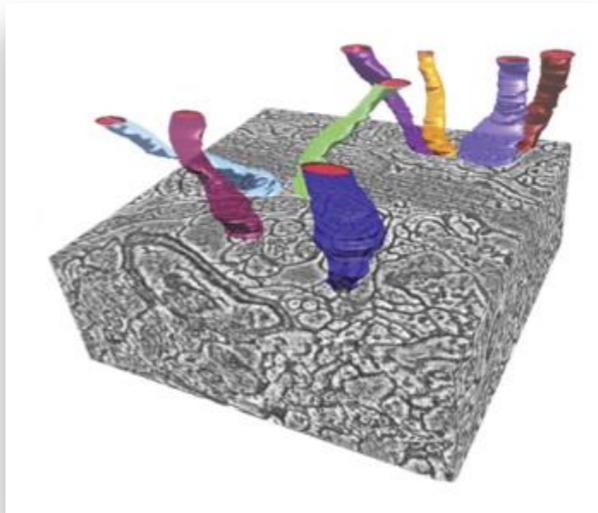


Computational Photography

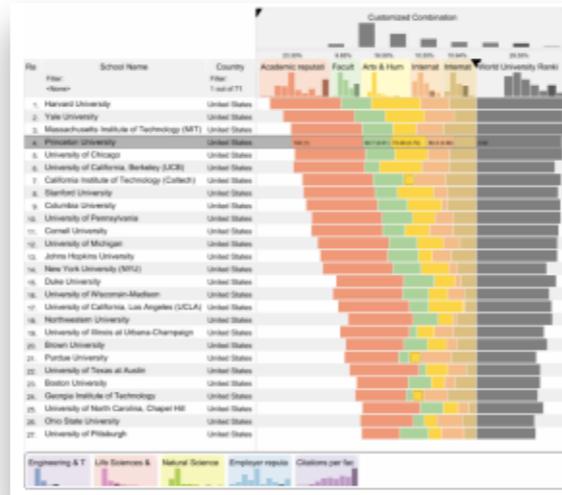


Appearance Modeling

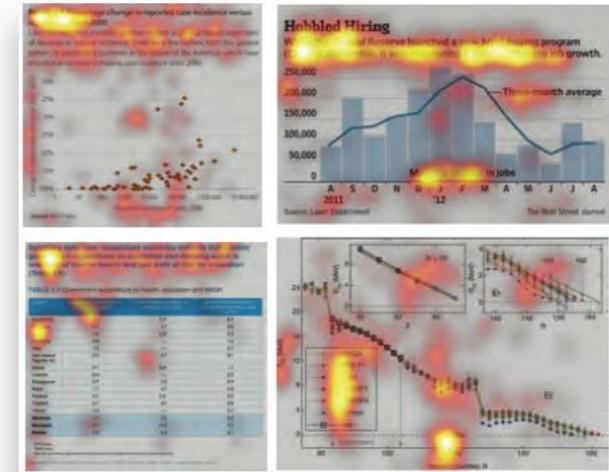
Visualization



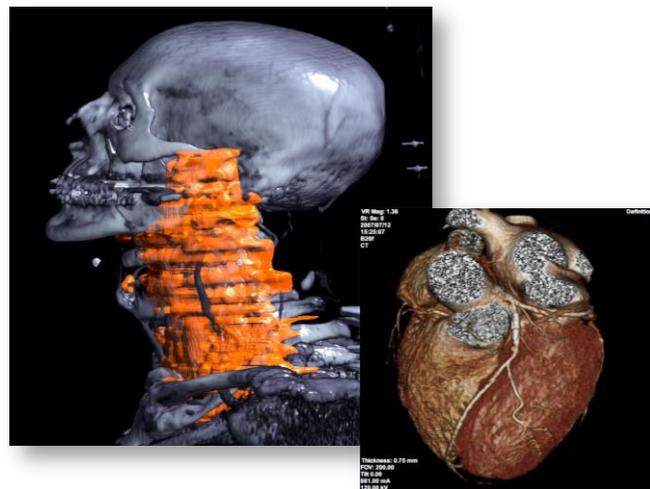
Connectomics



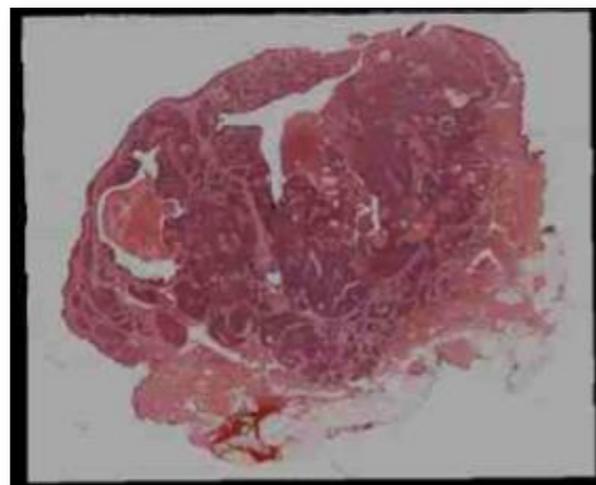
Information
Visualization



Visualization
Cognition



Bio-Medical
Visualization

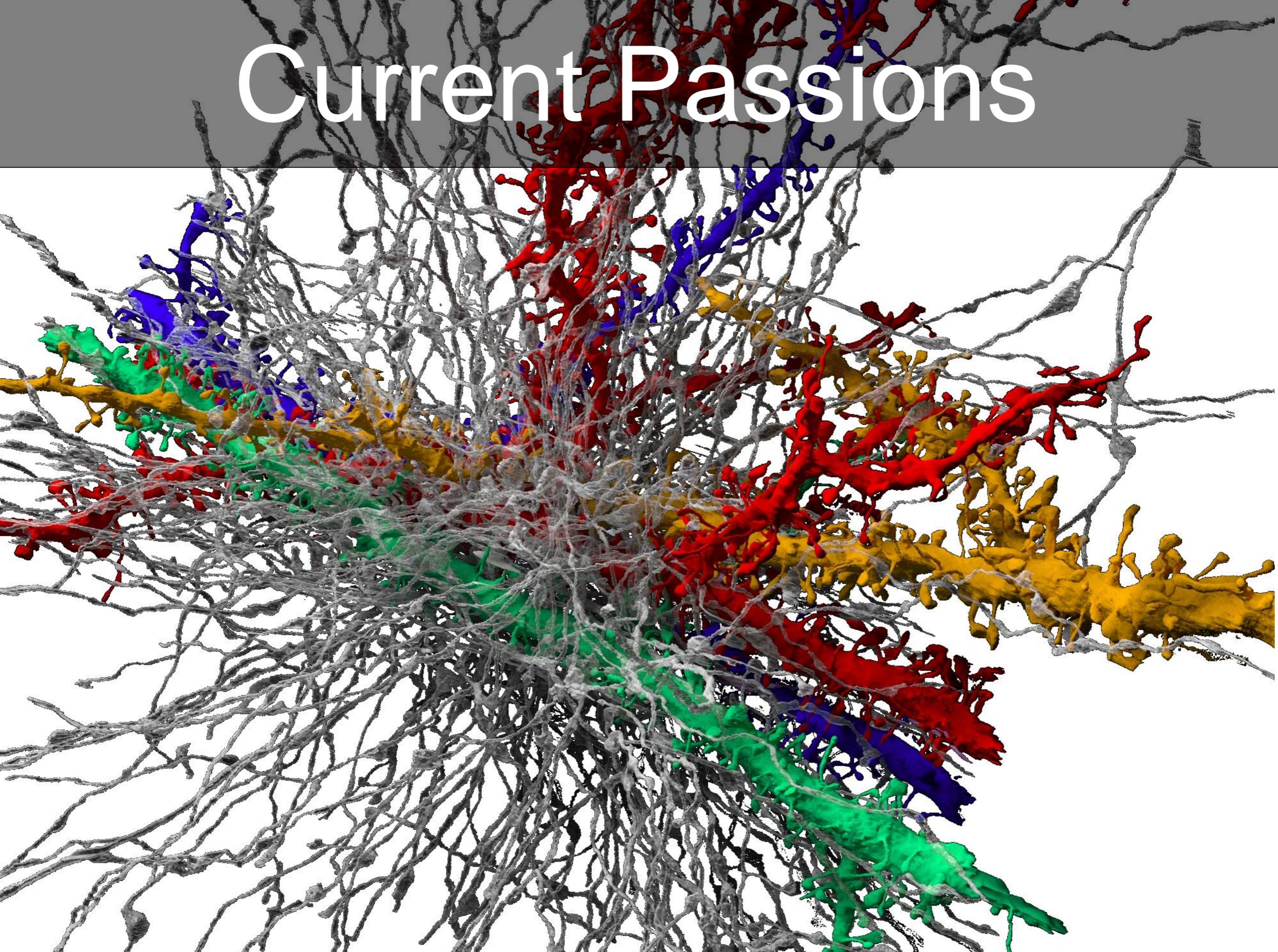


Digital
Pathology

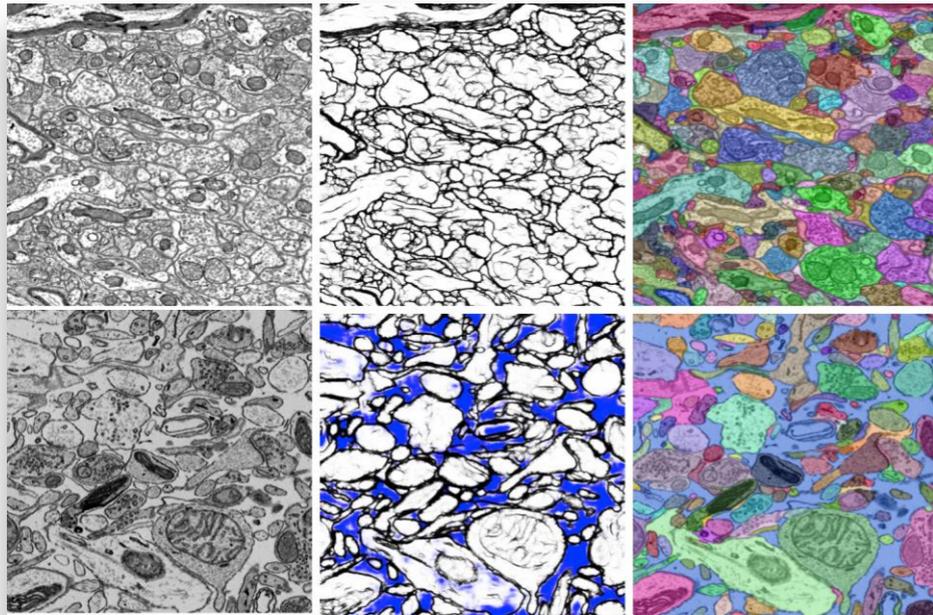


Visualization
Hardware

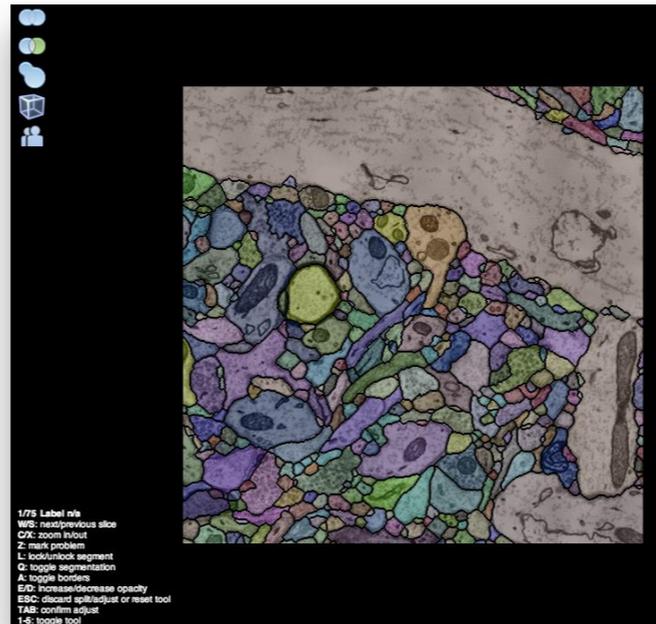
Current Passions



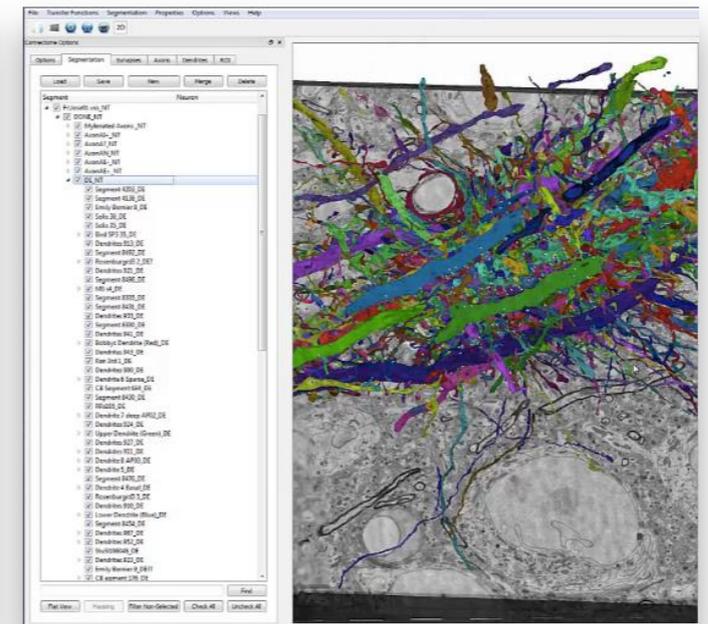
Connectomics



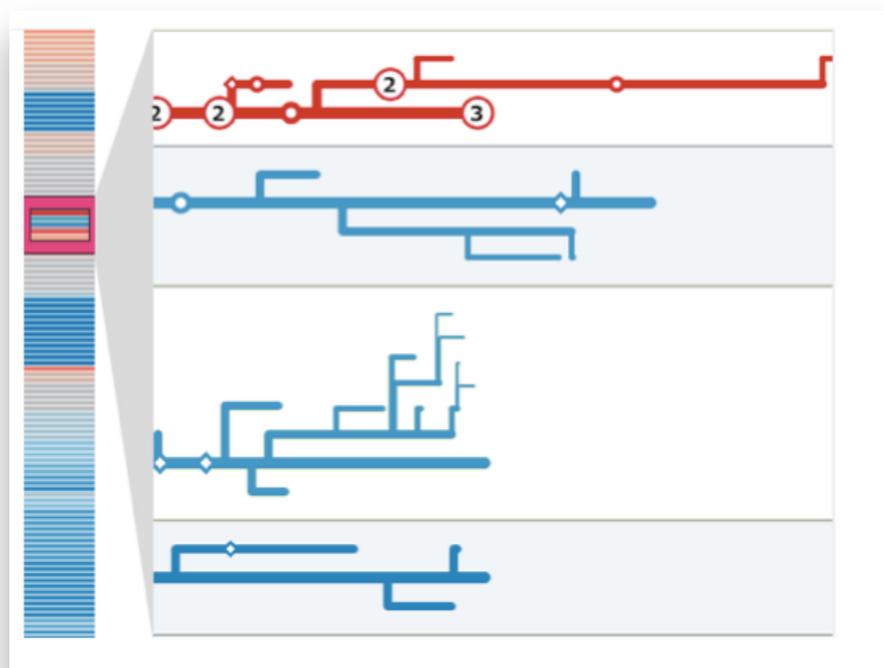
Automatic Segmentation



Proof Reading

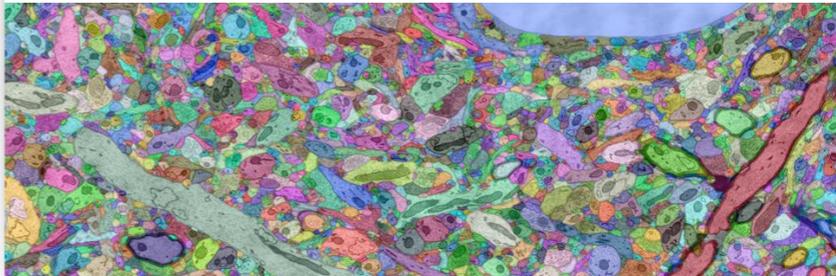


Visual Analysis



Network Visualization

RhoANA
Dense Automatic Neural Annotation



RhoANA is software for dense automatic annotation of neurons in EM serial sections. It includes a processing pipeline, as well as *Mojo*, a proofreading and annotation tool.

A preprint describing our work is available.

Our code is available on [github](#).

A beta distribution of *Mojo 2.0: Connectome Annotation Tool* is available along with some test data.

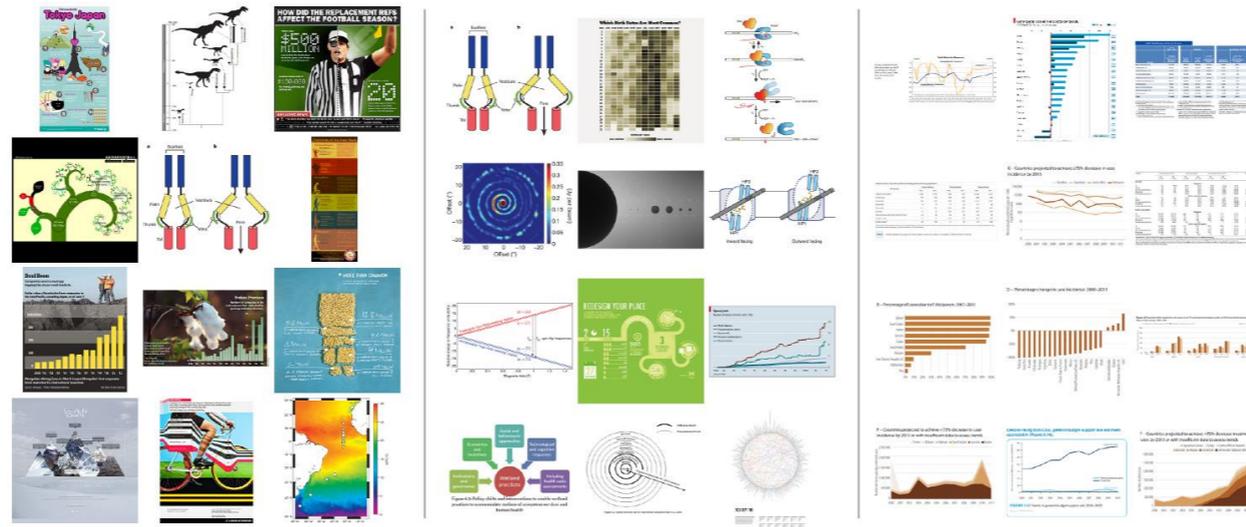
Information regarding *Dojo* - a web-based proofreading tool for distributed annotation, is available [here](#).

Jeff Lichtman spoke at [TEDxCaltech](#) (January 2013) on our efforts to understand the fundamental nature of the brain.

Links:
[Source code](#)
[Pfister group](#)
[Lichtman group](#)

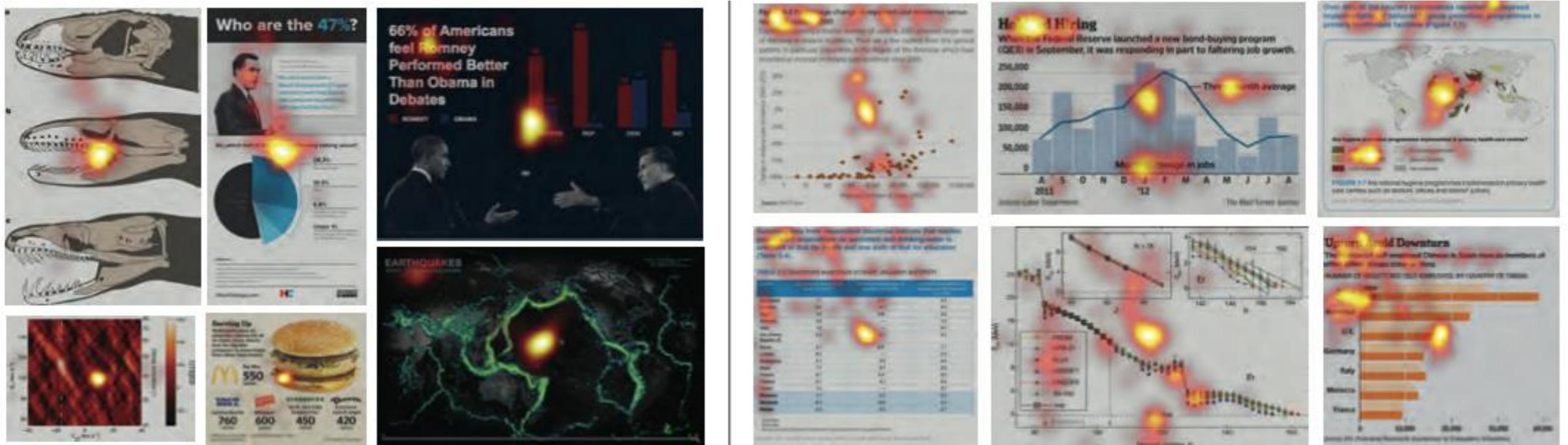
<http://www.rhoana.org/>

Visual Understanding



[Borkin et al. 2013]

Memorability (most to least)



Most recognizable

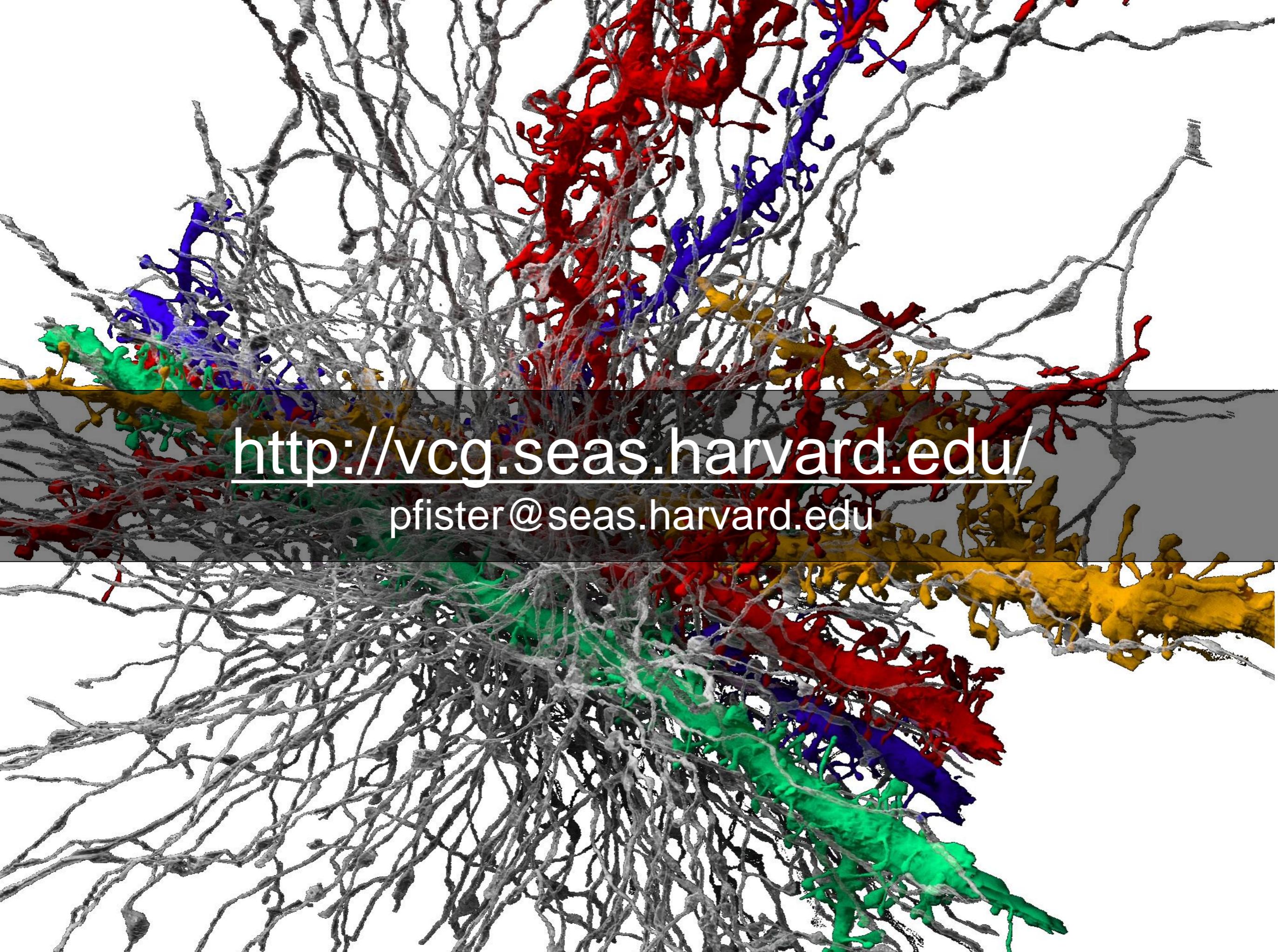
Least recognizable

Challenges

- Scalability & interaction for very large data
- Filtering signal from noise in big data
- Heterogeneity - integrating multiple datasets
- Visual cognition - what makes visualizations effective?
- Visualization Design Assistant

Wish List

- Better SW frameworks and libraries, especially for distributed analysis of complex data
- Deeper integration of algorithmic and visual analysis approaches
- More support for engineering that academic institutions usually are not set up to deal with
- More general funding opportunities between disciplines (also international)



<http://vcg.seas.harvard.edu/>
pfister@seas.harvard.edu