

Yuri Boykov

Research Interests

■ Computer Vision

■ Medical Image Analysis

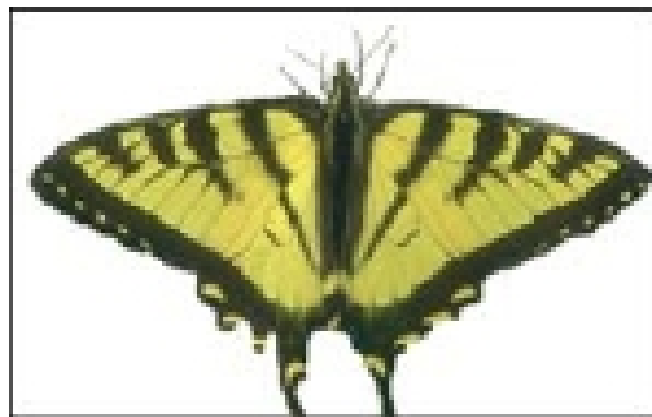
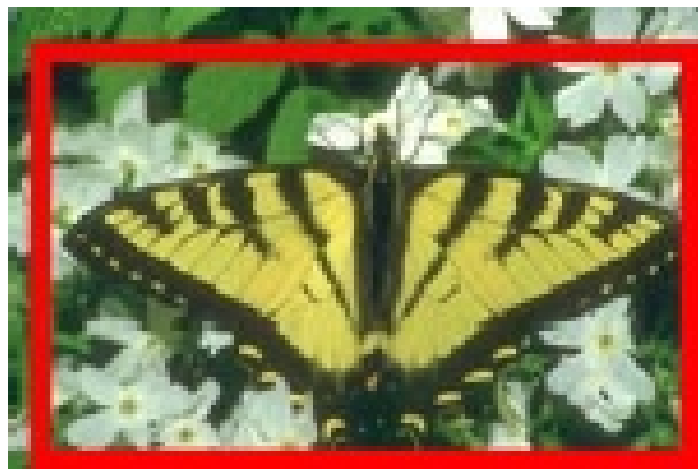
■ Graphics

Combinatorial
optimization algorithms

Geometric, probabilistic,
information theoretic, and
physics-based models.

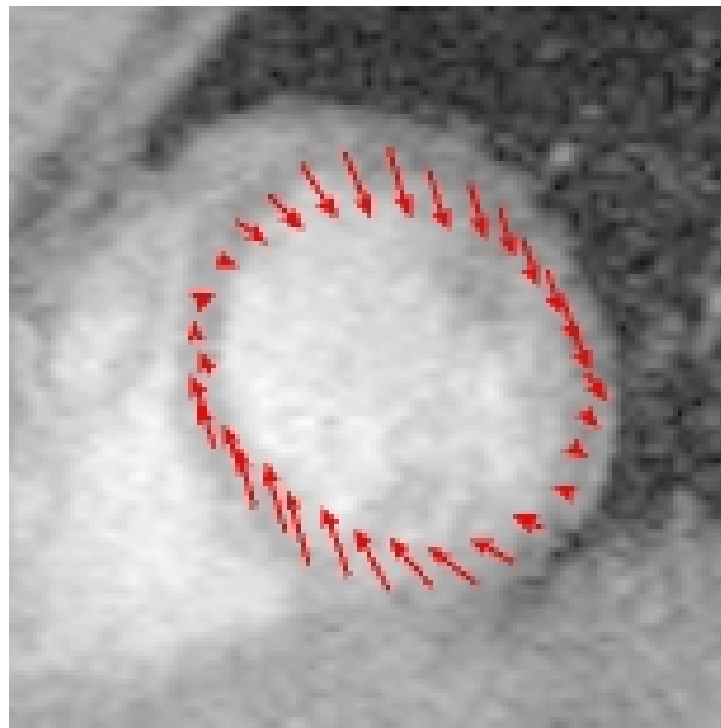
Geometric methods, combinatorial algorithms

Segmentation



Geometric methods, combinatorial algorithms

Motion



beating heart

Geometric methods, combinatorial algorithms

Multi-view shape reconstruction



multi-view reconstruction set up

Furukawa&Ponce ECCV'06

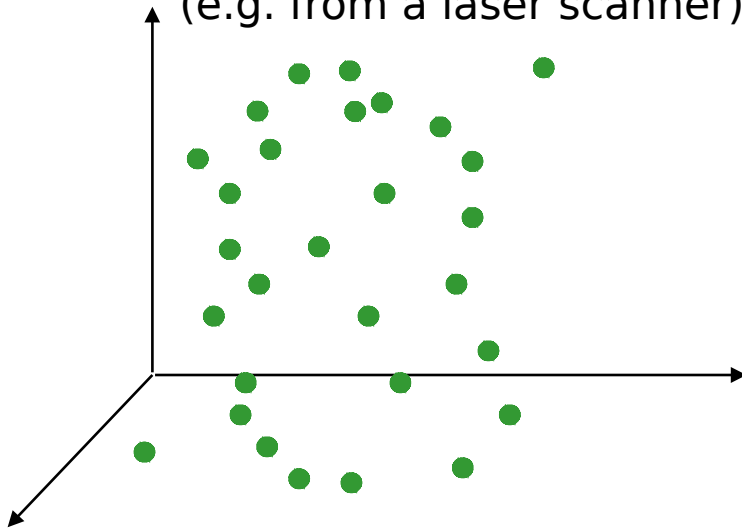


3D model (texture mapped)

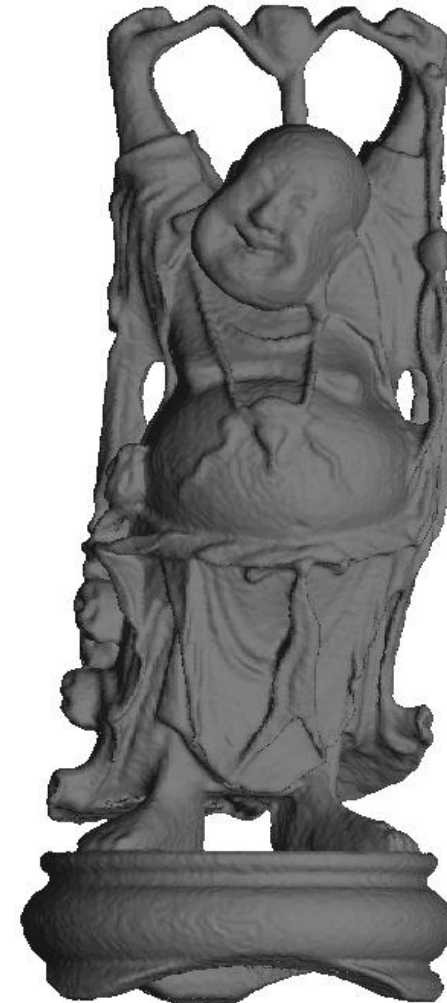
Geometric methods, combinatorial algorithms

Surface fitting

a cloud of 3D points
(e.g. from a laser scanner)



surface fitting:



3D model:

Geometric methods, combinatorial algorithms

model fitting

“left eye” image



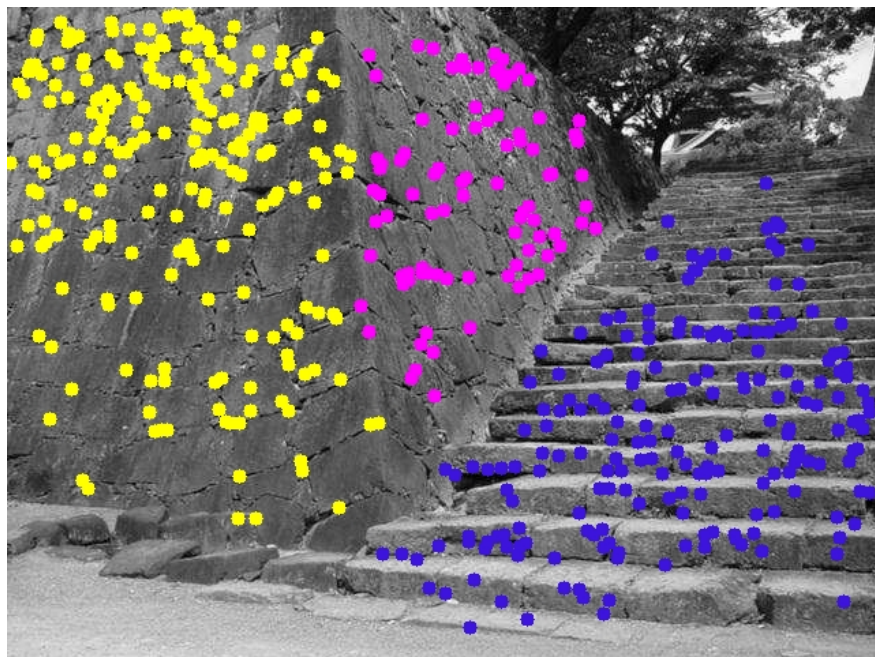
“right eye” image



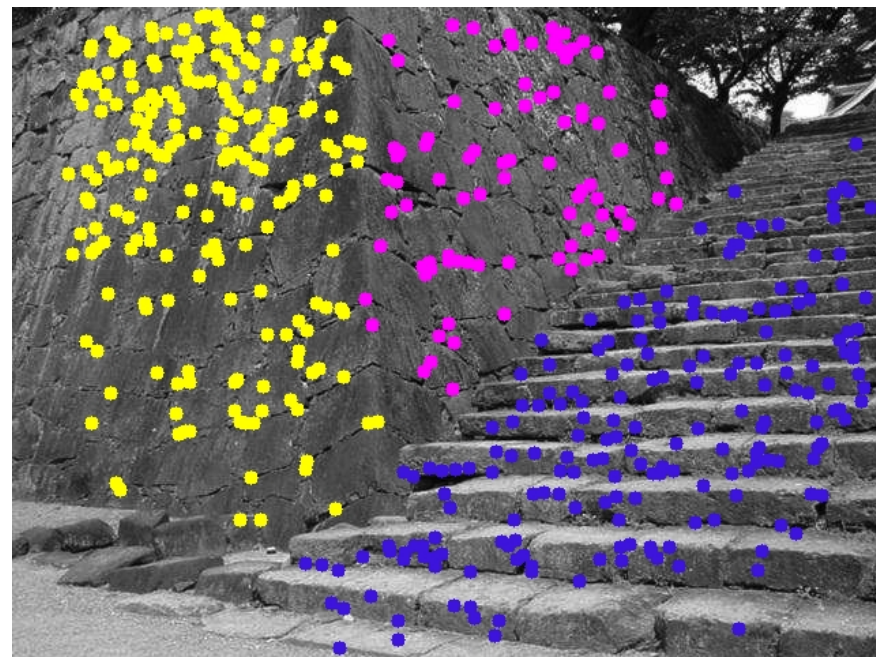
Geometric methods, combinatorial algorithms

model fitting

“left eye” image

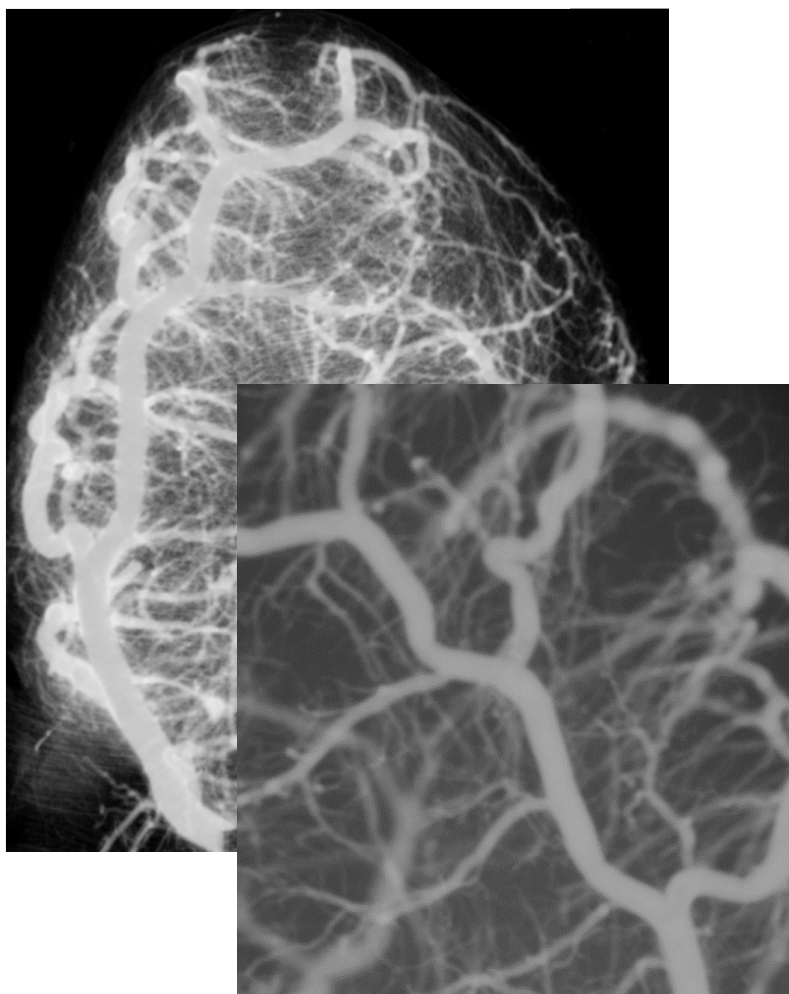


“right eye” image



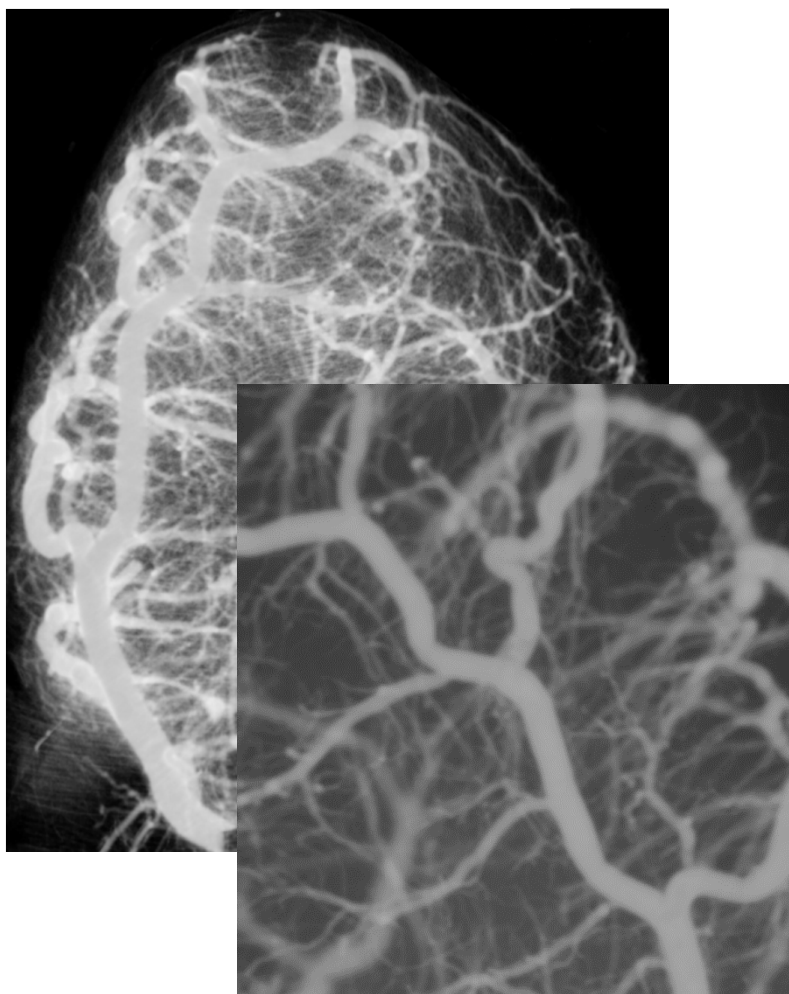
fitted planes

Bio-medical image analysis (model extraction)



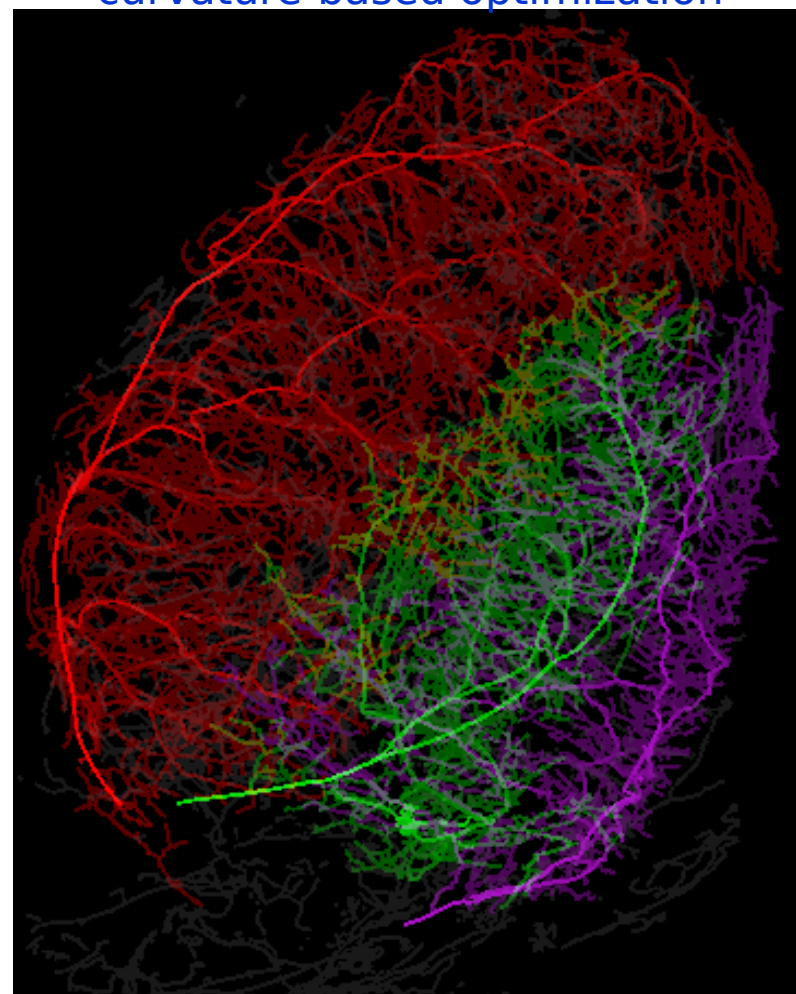
high-resolution CT volume (Robarts institute)

Bio-medical image analysis (model extraction)



high-resolution CT volume (Robarts institute)

curvature-based optimization

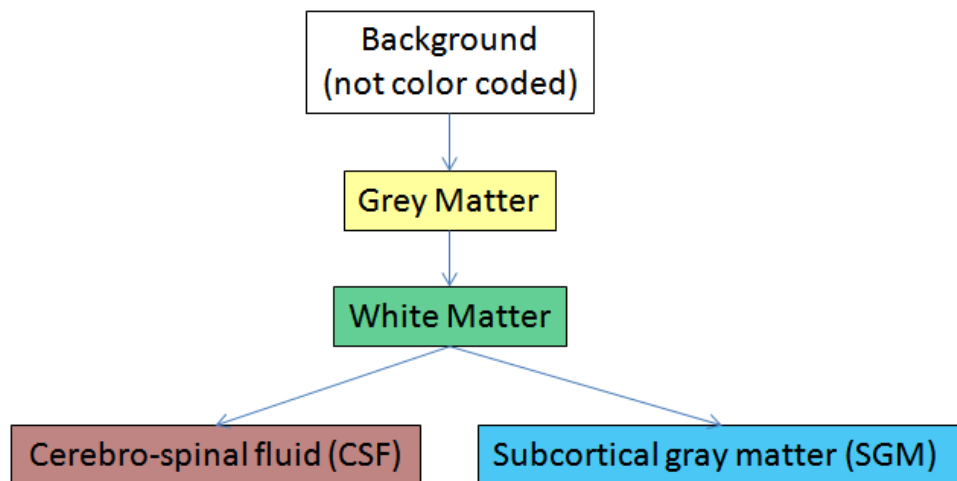


extracted model (vessel trees)

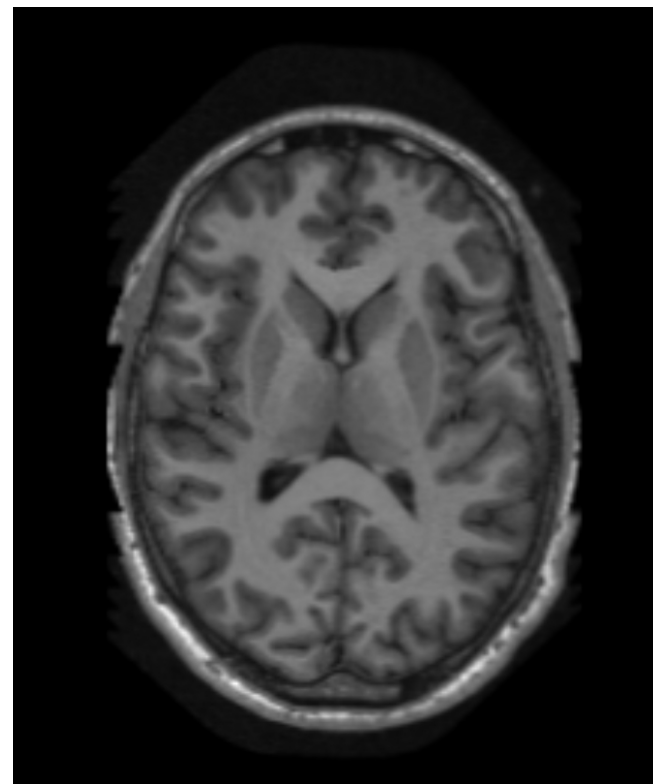
Bio-medical image analysis

(structured segmentation)

Label structure
(inclusion/exclusion tree)



brain MRI data

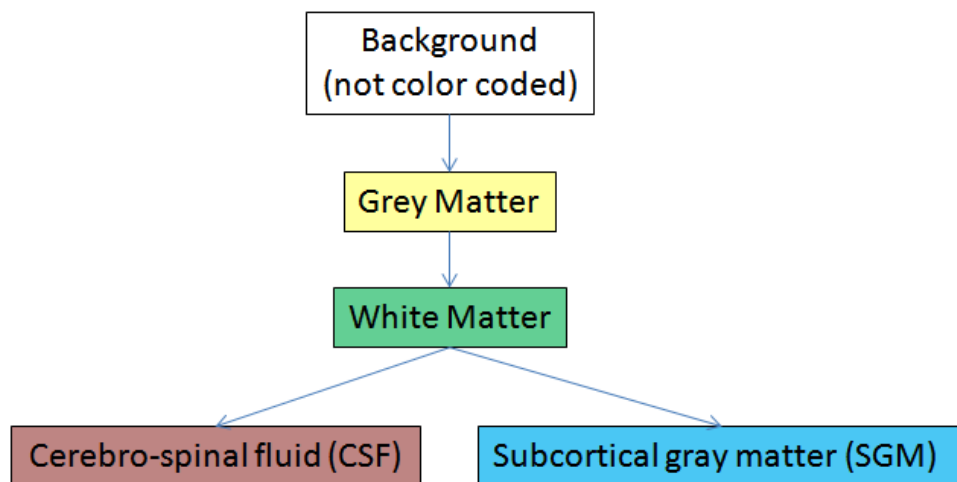


join project with UPenn and University of Iowa biomedical research institutes

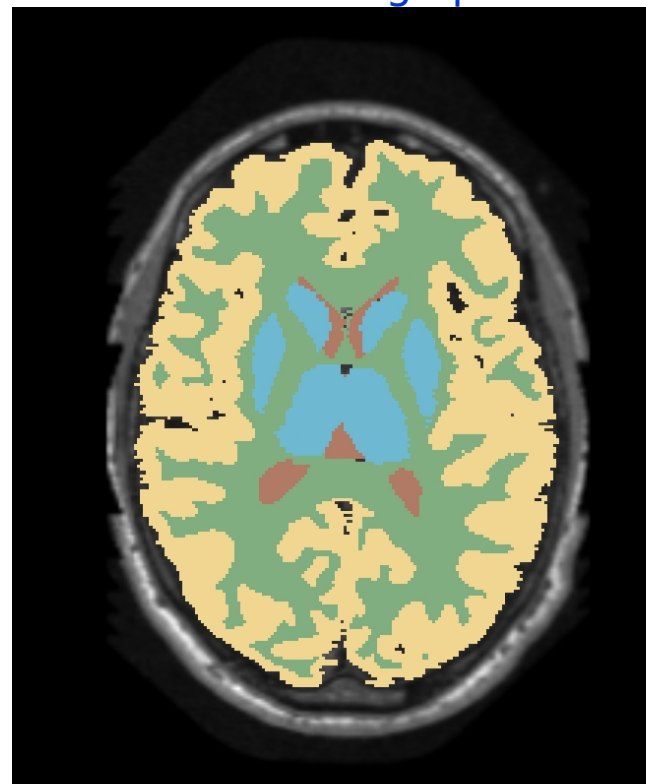
Bio-medical image analysis

(structured segmentation)

Label structure
(inclusion/exclusion tree)



segmented structures
(constrained labeling optimization)



join project with UPenn and University of Iowa biomedical research institutes

Graduate courses

- CS9629: Algorithms for Image Analysis (fall)
 - optimization algorithms in computer vision and medical imaging
- CS9837: Computer Vision for Graphics (winter)
 - graduate seminar
 - research papers from SIGGRAPH, ICCV, ECCV, CVPR