Yuri Boykov
Research Interests

- Computer Vision

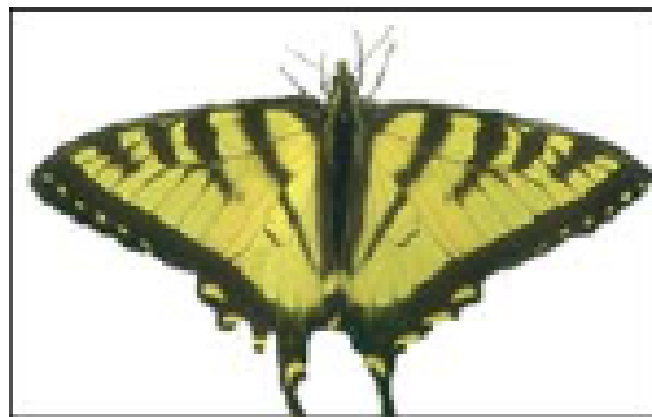- Medical Image Analysis

- Graphics

Combinatorial optimization algorithms

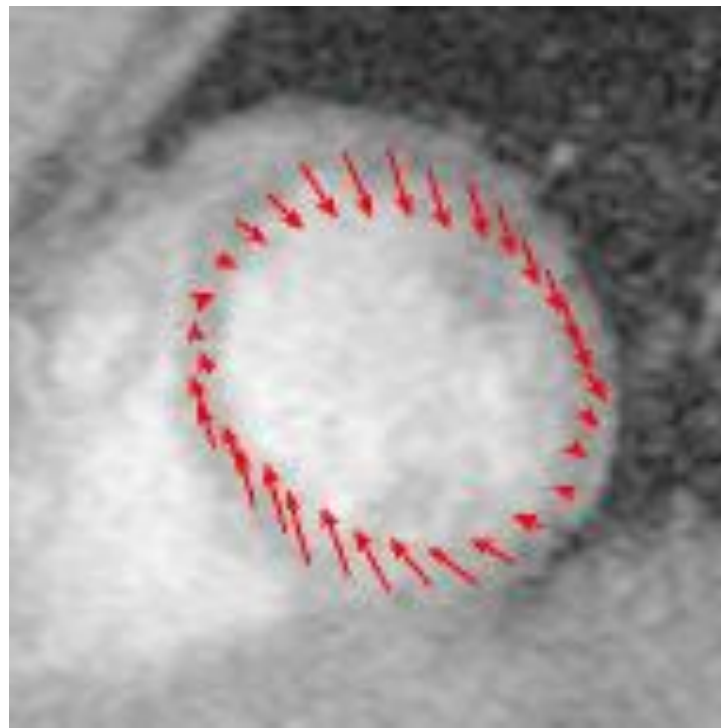Geometric, probabilistic, information theoretic, and physics-based models.

Geometric methods, combinatorial algorithms
Segmentation

Geometric methods, combinatorial algorithms
Motion

beating heart

Geometric methods, combinatorial algorithms
Multi-view shape reconstruction

Furukawa&Ponce ECCV'06

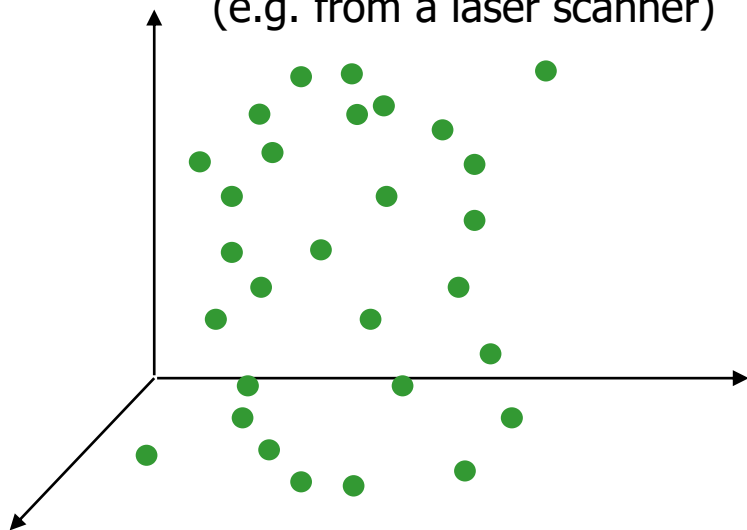multi-view reconstruction set up
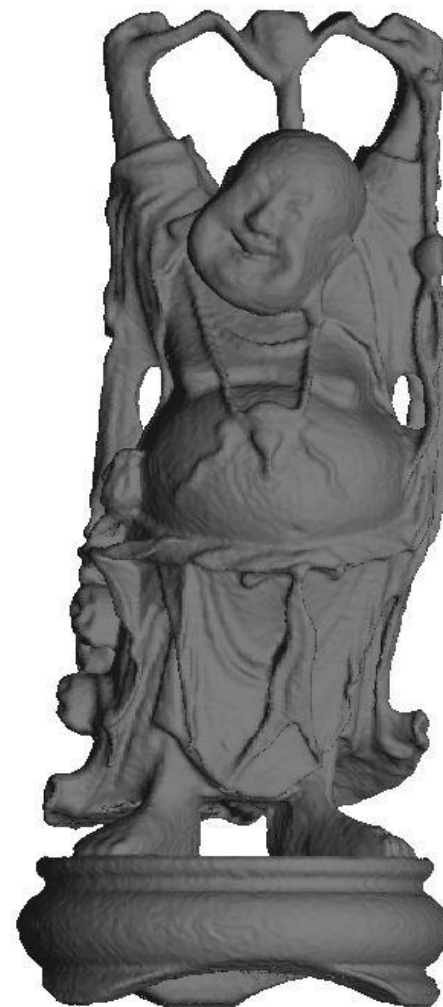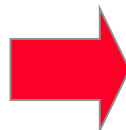

3D model   (texture mapped)

Geometric methods, combinatorial algorithms
Surface fitting

a cloud of 3D points

(e.g. from a laser scanner)

surface fitting:

3D model:

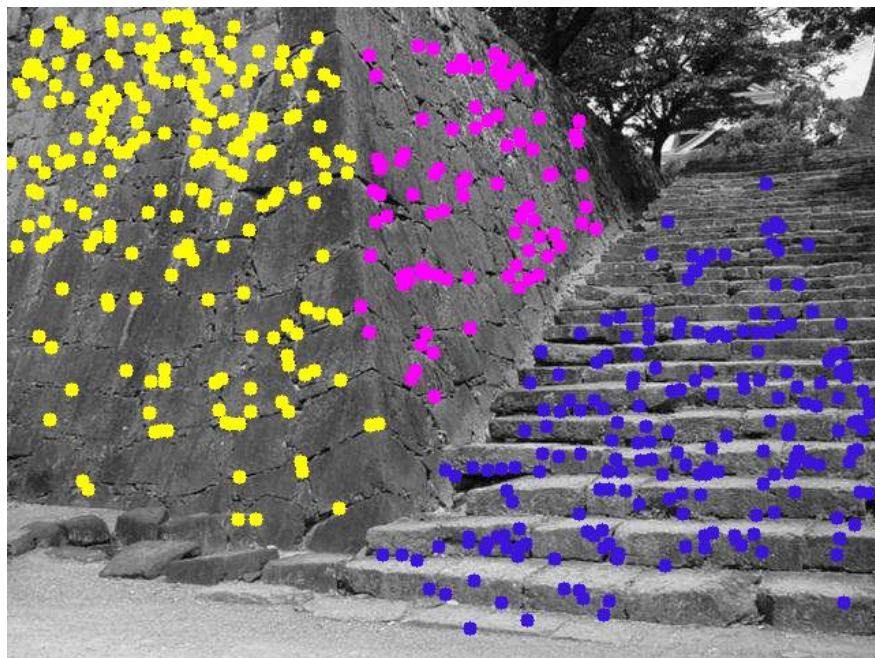# Geometric methods, combinatorial algorithms
model fitting
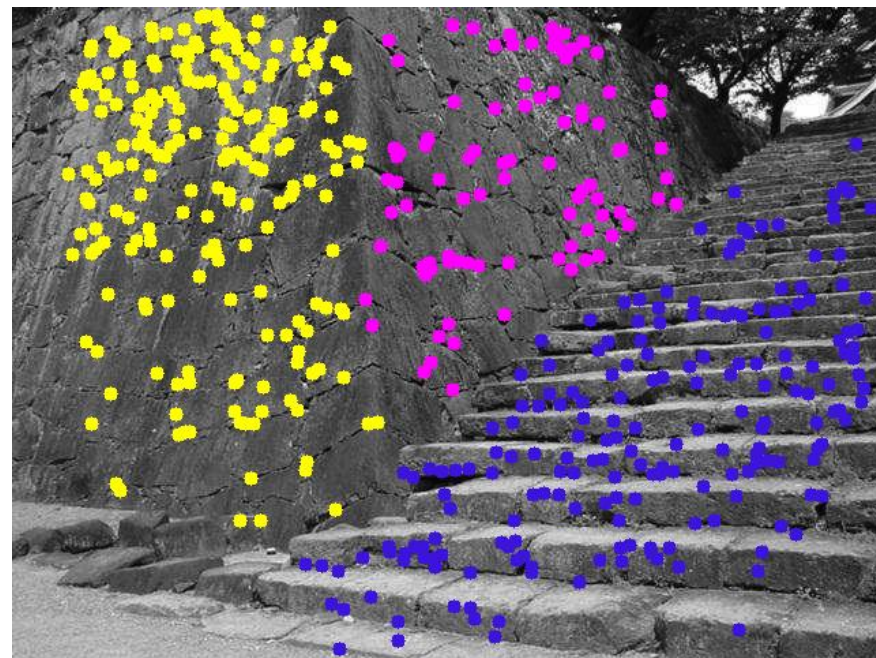
"left eye" image

"right eye" image

Geometric methods, combinatorial algorithms
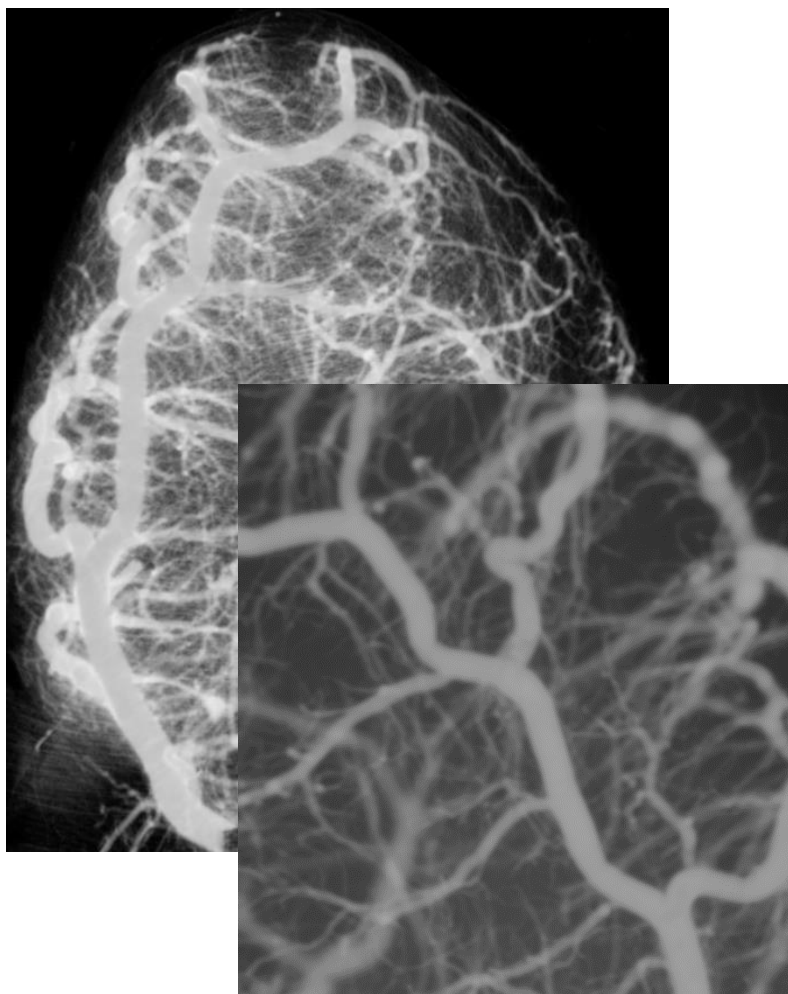## model fitting

"left eye" image

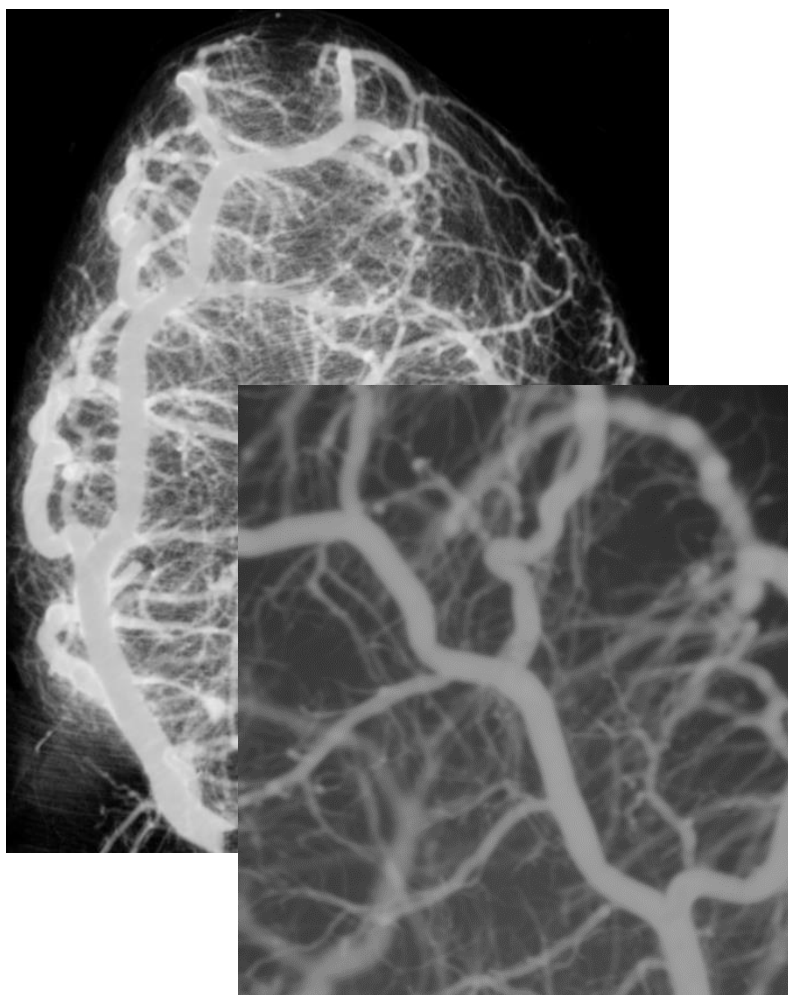"right eye" image

fitted planes

Bio-medical image analysis
(model extraction)

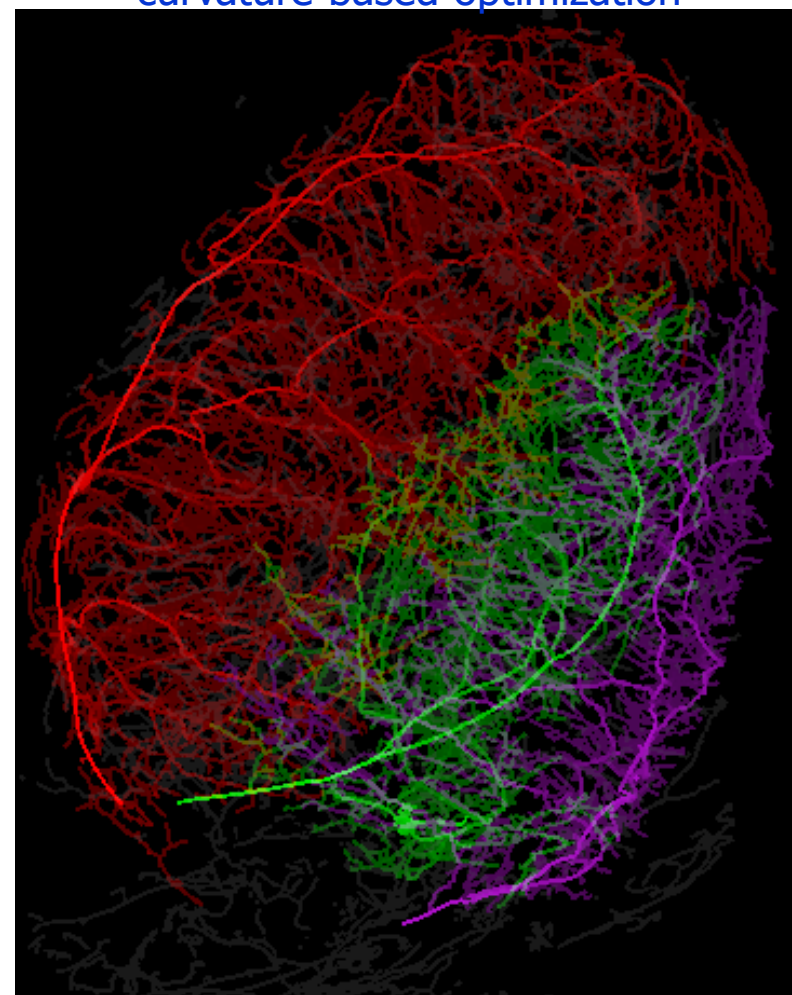high-resolution CT volume (Robarts institute)

Bio-medical image analysis
(model extraction)

curvature-based optimization

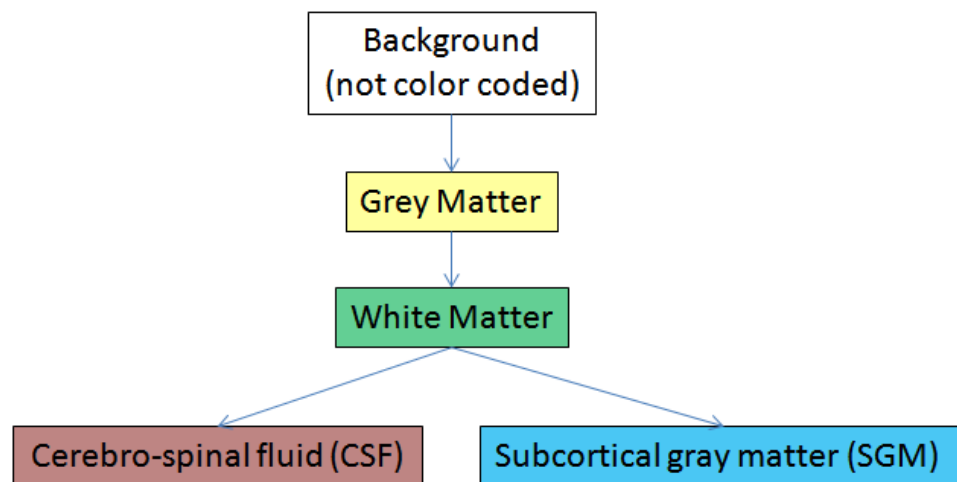high-resolution CT volume (Robarts institute)
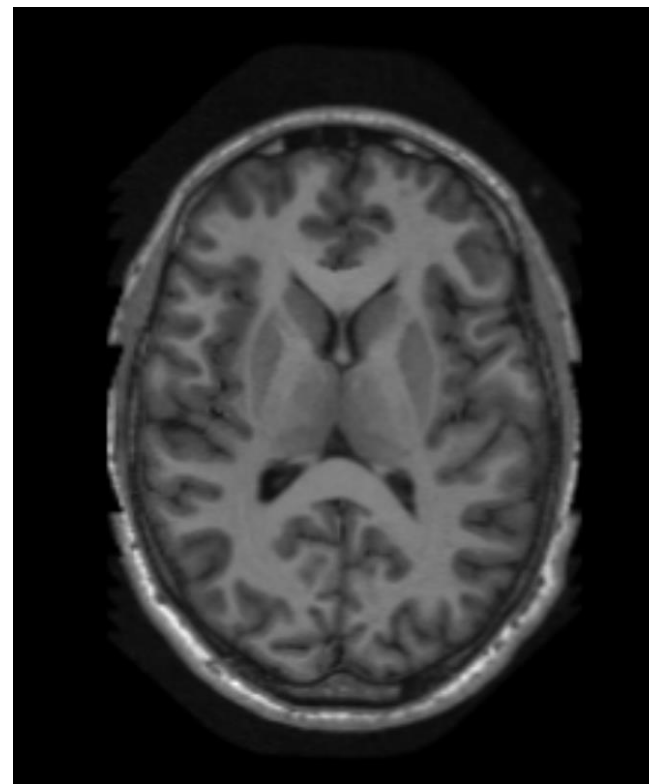

extracted model (vessel trees)

Bio-medical image analysis
(structured segmentation)

Label structure
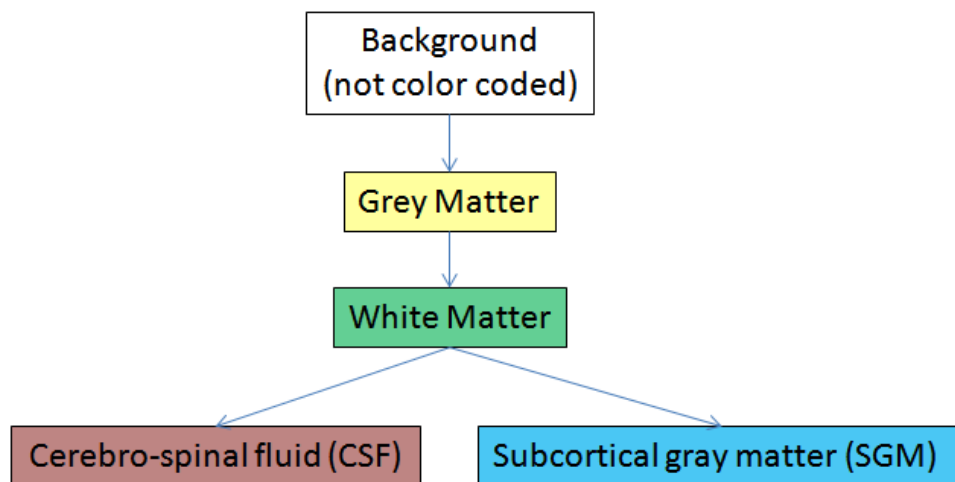(inclusion/exclusion tree)

brain MRI data

join project with UPenn and University of Iowa biomedical research institutes
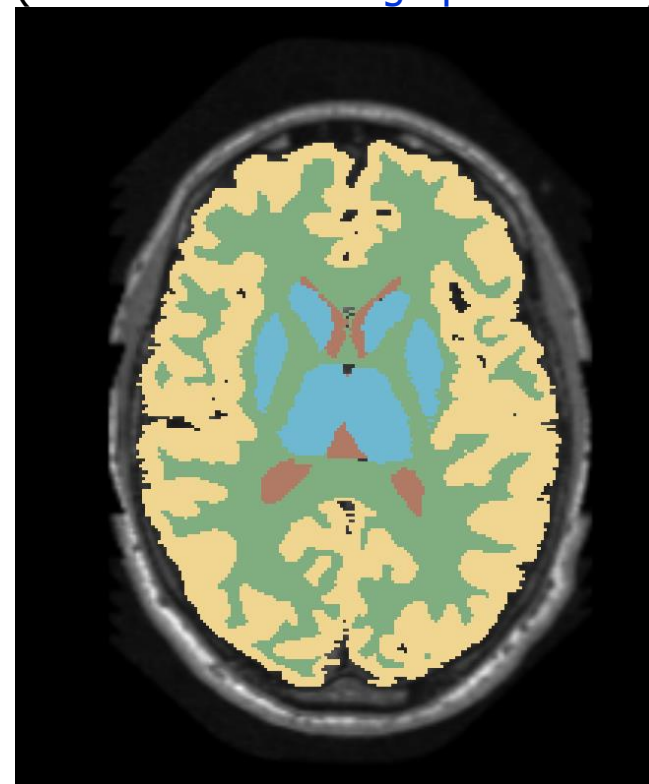
Bio-medical image analysis
(structured segmentation)

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