DBP: Atrial Fibrillation
The CARMA Team
Structure Matters
The Million $ Mechanistic Question

Afib begets Afib

Afib is a tissue disease
Utah Stages: Latest Edition

<10% 10-20% 20-30% >30%

Stage I Stage II Stage III Stage IV

Chris McGann
Utah Stages: Latest Edition

Log rank test p< 0.01

Follow up (days)

Recurrence Free Proportion

- SRM stage I (<10%)
- SRM stage II (10-20%)
- SRM stage III (20-30%)
- SRM stage IV (>30%)
What Does Image Processing Do?
The CARMA AF Workflow
Implementing the Workflow
Corview in Action
Corview in Action
Corview to the Future

Corview

Commercialization

This could be you!

Research
What Do We Do with Image Analysis/Simulation?
Fibrosis Analysis
Automated Segmentation


GA Tech: Segmentation of the Endocardial Wall of the Left Atrium using Local Region-Based Active Contours and Statistical Shape Learning, Gholami, et al., 2010
Shape Analysis

LA Shape Change over Time

LA Shape

LAA Shape

RAO
Extreme  Mean  Extreme
LPO

LA Shape Change over Time

Days Paced
0  150  300

a)  b)  c)  d)
Registration

Greg Gardner
Koji Higuchi
Alan Morris
Josh Cates
Refinement of Fibrosis Quantification

Matthias Koopman
Brian Zenger

Category Change Comparison

Number of Patients

Full Reduced
Patient Specific Models of AF

Josh Blauer

Natalia Trayanova

Kathleen McDowell
What Next?
More of the Same!

Shape Analysis + Registration = ?

Visualization of structure during treatment
More of the Same!

Visualization of structure during treatment
The Goals is Image Based Medicine