Some papers that caught my eye...

Tim Cootes

Developing Essential Rigid-Flexible Outer Sheath to Enable Novel Multi-piercing Surgery
Zuo et al

- Device to help in endoscopic surgery
- NOTES: Natural Orifice Transluminal Endoscopic Surgery
- Flexible outer sheath that can be locked pneumatically

Deriving Statistical Significance Maps for SVM Based Image Classification and Group Comparisons
Bilwaj Gaonkar and Christos Davatzikos

- SVMs often used to discriminate between groups
- Require permutation tests to get confidence limits
  - Very slow
- Show analytic (lin.alg.) approximation
  - Much faster, v.good approximation
  - Valid for n_samples<n_measurements
    - eg when using voxel values

Analysis of Longitudinal Shape Variability via Subject Specific Growth Modeling
J. Fishbaugh, M. Prastawa, S. Durrleman, J. Piven, and G. Gerig

- Estimates 3D+t growth model for
  - Reference population
  - Individuals in different groups
- Compute diffeomorphisms mapping reference to individuals
- Same start/end:
- Different paths:

S. Rapaka et al

- New approach to solve electrophysiology models
- Domain discretized on Cartesian grid
- Uses level-set representation of heart geometry
- 10-45 times faster than FEM approaches

Gibson, Fenster, Ward

- Quality of registration evaluated by power calculation
- Poor registration reduces overlap between ROIs, making it harder to identify differences across populations
- Relates reg. error, sample size, minimum detectable diff. between regions.
- Generates formulae and evaluates its effectiveness
Registration Using Sparse Free-Form Deformations, Shi et al

- B-Spline non-rigid registration usually uses coarse to fine + regulariser
- Shows better results if use all deformation modes, with regulariser encouraging sparseness
- Approx half errors of original approach

Context-Constrained Multiple Instance Learning for Histopathology Image Segmentation, Xu et al

- Segmenting cells in histopath. Images requires large amounts of training data
- Strongly supervised learning:
  - Requires detailed labelling of cancerous regions in image
- Weakly supervised learning:
  - Requires image level labelling (does image contain any cancerous cells or not)
- Context constraint:
  - Class label varies smoothly over image
  - Nearby regions tend to have same label
- Adds constraint to learning
- Improves performance significantly

Neighbourhood Approximation Forests
Konukoglu et al.

- Uses Random Forests to estimate subset of training set “near” to given target example
- Each tree node contains indices of examples which are ‘similar’
- Example applications:
  - Select similar ref. images for registration
  - Select similar image for age estimation

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Recognition in Ultrasound Videos: Where Am I?
Kwitt et al.

- Attempts to locate/recognise anatomical structures in ultra-sound
- Aimed at use of portable systems by less experienced people
- Represents sections of video as non-linear Dynamic Textures
- Parameters of model can be used to index a video
- Matches in database can be used to identify anatomical structures (roughly in realtime)

Accurate and Efficient Linear Structure Segmentation by Leveraging Ad Hoc Features with Learned Filters
Rigamonti and Lepetit

- Handcrafted features: effective but approximate
- Learned features: Slow
- Combine machine learning with handcrafted features
- Use of extra learned features significantly improves performance over handcrafted alone
Evaluating Segmentation Error without Ground Truth, Kohberger et al

- Estimate overlap error of segmentation by learning relationship with various image features
- Uses SVM regressor on variety of features
  - Statistics (median, quartiles etc) from gradients, intensities etc

Other papers to look at

- Geodesic Shape-Based Averaging, Cardoso et al.
- Atlas Construction via Dictionary Learning and Group Sparsity, Shi et al
- Bi-exponential Magnetic Resonance Signal Model for Partial Volume Computation, Q. Duchê et al.
- Dictionary Learning and Time Sparsity in Dynamic MRI, J. Caballero et al.
- Prior Knowledge, Random Walks and Human Skeletal Muscle Segmentation, P.-Y. Baudin et al.
- Automatic Detection and Classification of Teeth in CT Data
- A Novel Approach for Global Lung Registration Using 3D Markov-Gibbs Appearance Model
- Hierarchical Manifold Learning, Bhatia et al
- Shape Prior Modeling Using Sparse Representation and Online Dictionary Learning

More papers...

- Simultaneous Multiscale Polyaffine Registration by Incorporating Deformation Statistics
- Groupwise Rigid Registration of Wrist Bones
- Large Deformation Diffeomorphic Registration of Diffusion-Weighted Images
- Automated Diffeomorphic Registration of Anatomical Structures with Rigid Parts: Application to Dynamic Cervical MRI
- A Study on Graphical Model Structure for Representing Statistical Shape Model of Point Distribution Model
- Metamorphic Geodesic Regression
- Topology Preserving Atlas Construction from Shape Data without Correspondence Using Sparse Parameters
- Tree-Guided Sparse Coding for Brain Disease Classification