

## Reading Material for Elastic Shape Analysis

The primary resource for this class is *Functional and Shape Data Analysis*, by Srivastava and Klassen, Springer, 2016.

### Books on differential manifolds and differential geometry:

*An Introduction to Differentiable Manifolds and Riemannian Geometry*, Revised 2nd Ed., by William Boothby, Academic Press, 2002.

*Introduction to Smooth Manifolds*, 2nd Ed. by John M. Lee, Springer, 2012.

*Differential Geometry, Lie Groups, and Symmetric Spaces*, by Sigurdur Helgason, Academic Press, 1978.

### References for Kendall's shape space:

*Shape and Shape Theory*, by D.G. Kendall, D. Barden, T.K. Carne and H. Le, Wiley, 1999.

*Shape manifolds, procrustean metrics and complex projective spaces*, by D.G. Kendall, Bull. Lond. Math. Soc. 16, p. 81-121, 1984.

### References on vanishing of invariant $L^2$ metric on immersed curves

*Riemannian geometries on spaces of plane curves*, Peter W. Michor and David Mumford, J. Eur. Math. Soc. (JEMS) 8 (2006), 1-48. ESI Preprint 1425, arXiv:math.DG/0312384. (pdf).

*Vanishing geodesic distance for the Riemannian metric with geodesic equation the KdV-equation*, Martin Bauer, Martins Bruveris, Philipp Harms, Peter W. Michor, Ann. Glob. Anal. Geom. 41, 4 (2012) 461-472. doi:10.1007/s10455-011-9294-9. arXiv:1102.0236.

### References for Younes' invariant 1st order Sobolev metric on immersed curves in $R^2$ :

*Computable elastic distances between shapes*, L. Younes, SIAM J. on App. Math, 1998.

*A metric on shape space with explicit geodesics*, Younes, Michor, Shah, and Mumford, Rend. Lincei Math. Appl., 2008.

### References for Square Root Velocity Function (SRVF) metric on curves in $R^n$ :

*Shape analysis of elastic curves in Euclidean spaces*, Srivastava, Klassen, Joshi, Jermyn, IEEE PAMI, 2011.

*Precise matching of PL curves in  $R^N$  in the square root velocity framework*, S Lahiri, D Robinson, E Klassen, Geometry, Imaging and Computing, 2015.

*Optimal Reparametrizations in the Square Root Velocity Framework*, M. Bruveris, July 2015, SIAM Journal on Mathematical Analysis 48(6).

*Functional Data Analysis and Partial Shape Matching in the Square Root Velocity Framework*, FSU Dissertation, 2012, by Daniel Robinson. Available at: <http://diginole.lib.fsu.edu/islandora/object/fsu>.

### References on other elastic metrics on spaces of curves ( $G_{a,b}$ ):

*On shape of plane elastic curves*, W Mio, A Srivastava, S Joshi, IJCV, 2007

*Constructing reparametrization invariant metrics on spaces of plane curves*, M Bauer, M Bruveris, S Marsland, and P Michor. Differential Geometry and its Applications, 34:139-165, 2014.