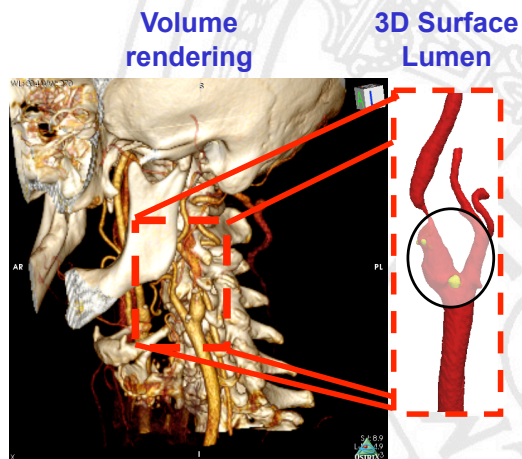


Iterative surface mapping for vascular biomechanics

Problem: Geometric modeling of the arterial wall is of critical relevance for the predictive properties of a computational model in vascular biomechanics. Mapping techniques can be applied to get a vascular surface that approximates the real artery starting from a primitive surface. The approach developed to date does not allow to get the appropriate primitive surface automatically.

Objective: Study of the available code and development of an iterative mapping algorithm to get the primitive surface automatically.



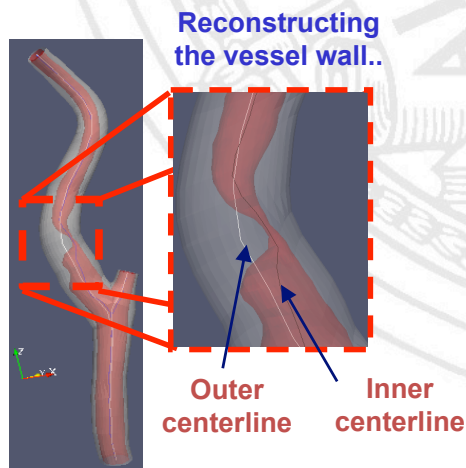
Type: Numerical

Prerequisites:

- Good knowledge of Matlab
- Attitude to computer programming (Python)

References

- Y. Bazilevs, V.M. Calo, Y. Zhang, T.J.R. Hughes. *Isogeometric Analysis of Blood Flow: a NURBS-based Approach* Institute for Computational Engineering and Sciences, The University of Texas at Austin, United States. 2006
- Y. Bazilevs, Y. Zhang, V.M. Calo, S. Goswami, C.L. Bajaj, T.J.R. Hughes. *Isogeometric Fluid–structure Interaction Analysis with Applications to Arterial Blood Flow* Computational mechanics, 2010, 199:229- 263, 2010.



Thesis proposal