

Read Me

2014/1/14, Takashi Ijiri @ RIKEN

1. Heart Models in **./HeartModel**

All heart models in the folder **“./HeartModel”** are constructed by Takashi Ijiri and distributed with Public Domain License. We appreciate if you provide a citation to the paper (but it is not required).

[1] T Ijiri et al. A Kinematic Approach for Efficient and Robust Simulation of the Cardiac Beating Motion, PLoS ONE, PLoS ONE 7(5), 2012.

2. Heart Model Construction

We modeled a heart surface model **“version4.blend”** with blender_2.69 <http://www.blender.org/>. We used the full heart model based on MRI data in [1] as a guide for modeling. We also referred anatomy text book [2,3] during modeling.

We convert the blender file to wave front obj **“version4Mesh.obj”**. We next apply Laplacian smoothing 1 time to it and reduce its vertices by using Quadratic Edge Collapse Decimation on Mesh Lab <http://meshlab.sourceforge.net/> obtain (target face number: 3000) to obtain **“version4Mesh_lap1_col3000.obj”**.

Finally, we manually removed a self-intersection to obtain **“version4Mesh_lap1_col3000_manu.off”** and convert this surface model to tetrahedral mesh model **“Model_A.ele & Model_A.node”** by TetGen <http://wias-berlin.de/software/tetgen/>.

We subdivided the Model_A to obtain Model_B and Model_C.

See <http://wias-berlin.de/software/tetgen/formats.html> for detail on file format (.ele/.node).

3. Model Size

The heart models should be re-scaled before use so that its vertical axes are 14cm. If the models are scaled appropriately, it has the following characteristics;



[2] 藤田恒太郎, 人体解剖学. 南江堂; 改訂第 42 版, 2003.

[3] A. シェフラー, S. シュミット, 体の構造と機能, 西村書店, 1998.