Minutes of Meeting

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| Date : 12 April | Location : Chris’s Office |

# Attendees:

Gib, Jagir, Chris, Hashem

# Agenda:

* Discuss the transformation applied to the meshes to align chosen landmarks to the boundary condition axis.
* Discuss the application of the Dorsal Mesocardium boundary condition
* Solving the growth problem by considering intrinsic or extrinsic approach

# Hashem’s action items

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| --- | --- | --- | --- | --- |
| No | Item Description | Date allocated | Date completed | Remarks |
| 1 | Document the python code used to setup the problem to identify the growth rates that reproduce the observed growth kinematics | 1st Feb 2018 |  | Ongoing |
| 2 | Present a draft thesis outline highlighting aspects that have been completed, that are under preparation and those that need to done to meet the examination criteria. | 9th Feb 2018 | 8th March 2018 |  |
| 4 | Complete simulations to determine growth laws for all stages. | 9th Feb 2018 |  | Expected to be completed by April 2018 |
| 5 | Prepare and submit a conference paper (say IEEE EMBS etc) | 9th Feb 2018 |  | Expected to be completed by May 2018 |
| 6 | Submit a manuscript describing the inverse modelling process (targeted towards a computer/numerical methods journal) | 9th Feb 2018 |  | Expected to be completed by June 2018 |
| 7 | Register the meshes such that the landmarks chosen to satisfy boundary kinematic constraints, i.e., the landmark’s dof is constrained along specific coordinate axis. | 29th March 2018 |  | Ongoing |
| 8 | Setup OpenCMISS-IRON on hpc6 | 9th Feb 2018 |  | Ongoing |

# Thesis writing progress

List of planned thesis chapters, major sections and their progress

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| --- | --- | --- | --- |
| Chapter No/Title | Progress % | Target Completion Date | Review/Comments |
| Chapter 0, 1 | 100 | 08th April 2018 | Updated existing notes |
| Chapter 2 | 70 | 13th April 2018 | Derived from existing report |
| Chapter 3 | 50 | 23rd April 2018 | Derived from existing report |
| Chapter 4 | 10 | 04th May 2018 | Only structural outline exists |
| Chapter 5 | 60 | 09th May 2018 | Derived from existing report |
| Chapter 6 | 10 | 19th May 2018 | Only structural outline exists |
| Chapter 7 | 30 | 21st May 2018 | Updated based on current outcomes |
| Appendix | 40 | 30th May 2018 | Growth documentation ongoing |

# Major decisions

* Two different methods of measuring the accuracy of the solution in the growth problem have been discussed. The discussion is still ongoing about this topics, finalised decisions will be put in action immediately.

# Remarks

* There are two different approaches looking to the growth problem. One of them is to have the boundary conditions constraint the mesh from the beginning to the end of the growth time, and solving the inverse growth mechanics problem such that the first mesh grows deforms to the shape of the target. Another method will be to solve the growth problem and instead of fitting to the exact target rely on the shape parameters such as length, angel, area, volume, etc. By using the second method, local changes on the boundary conditions are not required and the state of the mesh will be evaluated based on its shape factors, not the exact location of the nodes.
* The best orientation of the meshes are provided through simple optimisation problem. Still local change on the meshes are required to bring the best accuracy.