## CMS-Team Project (12 weeks, 8 SWS)

Study course:                Computational Modeling and Simulation

Assignment to the module:     CMS-___VC-TEA_____
(SELMA registration number)

Members of the team:          on the reverse side

**Topic of the research project:** Tractography based visual diagnostics

**Start date:** _____11.05.2020_____  **Submission deadline**_____31.07.2020_____

## Task description

The aim of the project is to perform visual diagnosis of healthy and diseased subjects based on fiber
tracts derived from diffusion MRI (dMRI) volume of the human brain. The goals are:

1) Literature review on state-of-the-art methods and toolboxes related to dMRI volume pre-processing,
fiber orientation estimation, fiber tracking and tract segmentation .

2) Pre-processing of the dMRI datasets to eliminate noise and prevalent distortion/motion correction.

3) Study and implementation of fiber orientation estimation at a single voxel resolution of dMRI volume.

4) Study and implementation of fiber tracking and segmentation methods using Region of interest (ROI).

5) Qualitative and Quantitative evaluation of tracking and segmentation methods for healthy and

diseased subjects. (Note: The team consists of 4 members with 3 participants for CMS-VC-TEA)

Optional Goals:

a) Study and implement a VR user interface to perform immersive evaluation of fiber tract results.

Name of the examiner:         Prof. _____Dr. Stefan Gumhold_____

_____        _____

Date:                                                    Signature

**Team Members**

Registration for the Team Project:

_____

| Name | First Name | Students' ID number | Signature |
|---|---|---|---|
| Venkit Raj Reddy | Raveen | 4879524 | *Raveen* |
| Soldatova | Elizaveta | 4907866 | *Caig* |
| Hoffmann | Nils | 4879789 | *Nils R* |
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