ITU Faculty of Computer and Informatics
Department of Computer Engineering

Project Plan

Medical Image Segmentation in MRI Scan Images

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24.02.2016

1. **Purpose of Project**

   Project topic is concerned about applying image segmentation methods in 2D layers of 3D structural image files which are obtained from Magnetic Resonance Imaging technique.

   The aim is to detect and mark a specific lesion which indicates a distinct health problem in a certain part of the body. Therefore, main success factor of the project is to correctly analyze the data and to properly label the sign of the health problem.

2. **Scope of Project**

   In the project, Uncompressed Neuroimaging Informatics Technology Initiative (NIfTI) formatted MRI scan images will be used as input data. Python modules and packages about data visualization, scientific computation and medical image processing tools (e.g. Matplotlib, NumPy, MedPy, Nibabel, ITK) are planned to use in order to achieve aim of the project.

3. **Estimates About Project**

   Total estimated time for the project is 40 weeks. Required data for the project will be acquired from online open medical image databases. Project does not depend on any additional hardware.

4. **Risk Management**

   There are several risks are involved with the project, for instance delay of the work packages may alter time plan. Also, change in the requirements may alter project process dramatically.

5. Time plan

Milestones	Start Date	Duration (weeks)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
Determination of requirements	01.03.2016	2																																									
Analyse of the problem	14.03.2016	2																																									
Research in the problem domain	21.03.2016	7																																									
Research about image segmentation	18.04.2016	7																																									
Installation & practice for required tools	16.05.2016	3																																									
Practice about image segmentation	30.05.2016	4																																									
Development of the project	20.06.2016	18																																									
On-going research during project	20.06.2016	18																																									
On-going test of the project	08.08.2016	12																																									
Final documentation about project	10.10.2016	8																																									

6. Project Sources

About the problem domain, project sources consist of online medical databases, research articles, university library online and printed sources.
For application domain, IEEE and ACM sources will be used in addition to university library online and printed sources.

7. References

Chen, C. .H. (2014). An Introduction to Computer Vision in Medical Imaging. In Chen, C. .H (Ed), Computer Vision in Medical Imaging (pp. 3-6)

Neuroimaging informatics technology initiative. (2007). NIfTI. Retrieved 24 February, 2016, from http://nifti.nimh.nih.gov/

Zhu, H. (2003). Medical Image Processing Overview. University of Calgary, Summer School Program-Introduction to Mathematical Medicine, held at the University of Waterloo.

Clarke, L. P., Velthuizen, R. P., Camacho, M. A., Heine, J. J., Vaidyanathan, M., Hall, L. O., ... & Silbiger, M. L. (1995). MRI segmentation: methods and applications.