Assessment of vertebral morphology

OsiriX Foundation

September 7, 2009

1 General Conditions

Please refer to `http://www.osirixfoundation.com/awards.html` for General Conditions.

2 Category

This document describes a **Category 2** Plugin Award Project.

3 Description

Vertebral fractures and compression occur in patients with osteoporosis and following trauma. Specific parameters based on the shape and deformity of the vertebra are used to classify vertebral fractures based on international criteria. Automatic analysis of each vertebra and its morphology can be automated. Such automatic analysis already exist for images obtained in the lateral projections from osteodensitometry scanners. Similar analysis should be developed for images obtained from CT scans of the spine.

4 Requirements

The goal of this plugin is to perform automatic analysis of the shape of selected vertebra from a profile contour of each vertebra. The process should include:

- Automatic generation of a profile view of the spine where each vertebra is projected in a projection that is perpendicular to the central axis of the vertebra.
- Automatic identification of the rectangular approximation shape of the profile of the vertebra.
- Extraction of standard parameters and classification of the possible vertebral fracture and compression based on international criteria

5 Deliverable

1. A fully functional plugin that generates a reconstructed profile view of the spine where each vertebra is displayed in its best projection
2. Identification bay the user of the vertebra(s) that should be analyzed
3. Automatic contouring and extraction of compression parameters and classification of degree of fracture for each vertebra
4. Display the results in a synthetic result window that can be exported in PDF or in DICOM format

6 Contact

Contact the OsiriX Foundation using: osirix@osirixfoundation.com