

Analysis of 4D Magnetic Resonance Urography Images

Medical personnel from the University Children's Hospital Zurich conduct urographical analysis on children on a regular basis. Due to several restrictions with their current image analysis method they would like a simpler and quicker alternative. The aim of this thesis is to describe the resulting software prototype and to evaluate its practicability.

The beginning provides an overview on kidney functions and analytical methods and draws a comparison with existing software. The detailed central section describes our methods and results and the prototype is examined from a user's and a developer's point of view, including explanations on workflow, formulae and code examples.

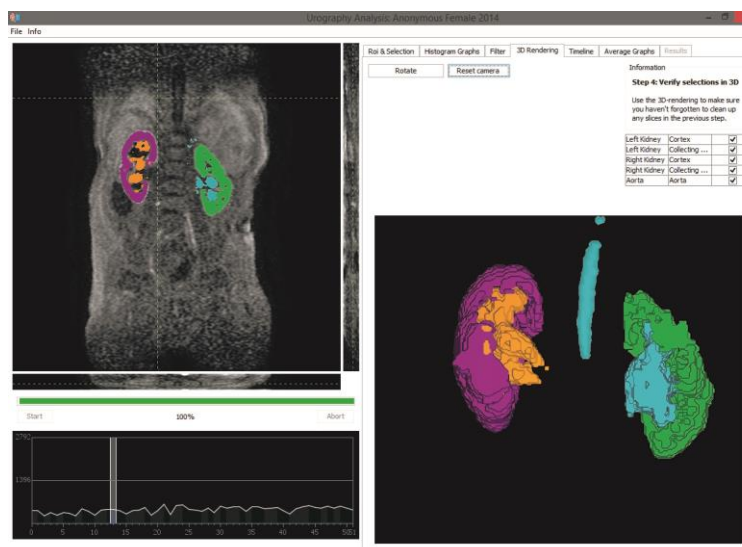
Using four anonymised MRI scans a new segmentation approach was developed and tested. The results and differences with respect to other segmentation methods are illustrated and qualitative results from the analysis are discussed.

In conclusion, the paper argues that the prototype creates very promising results and simplifies the workflow for radiologists significantly by integrating both segmentation and analysis into a single software program.



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Screenshot of the software prototype. Visible in the lower right corner: 3D model of the segmented kidneys.