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CYSTORAMA: PANORAMA ENDOSCOPY FOR ENHANCED DOCUMENTATION OF THE BLADDER

Clinical challenge

A challenge of diagnostic and interventional cystoscopy is a limited field of view (a »keyhole view«) into the bladder.
In order to assess and examine the entire bladder wall during a diagnostic cystoscopy and to examine changes in the tissue, the tip of the cystoscope is moved along the bladder wall in a spiral or in a meander fashion.
Because the view captured by the endoscope is only temporarily visible, the examiner must create theoretical associations between the actual view and its anatomical context.
Up to now, the only available means for documenting endoscopic examinations have been individual images with limited field of view or video sequences, which are difficult to forward or archive.

1

Our solution – panorama views at a glance

With the development of »stitching technologies«, high-definition panorama images of the bladder are created from the cystoscope system's recorded image data streams.
These panorama images of the bladder allow several fields of view to be shown simultaneously.
The most current image is projected onto the panorama image so that the examiner always sees the »live image« in the anatomical context.
In addition, areas that have not yet been examined are shown as empty spaces, indicating where the bladder still needs to be examined. The panorama representation of the bladder makes orientation, navigation, and creating documentation during the examination easier, faster, and more efficient.

2

Your benefits at a glance

- A field of view that can be expanded dynamically during cystoscopy
- Documentation of cystoscopy procedures with high-definition overview recordings in real time
- Quicker orientation during the examination
- Improved relocalization of lesions
- Endoscope path superimposed for quality control
- Intuitive interaction (pan and zoom) for viewing the panorama image
- Insertion and augmentation of annotations possible for easier information sharing
- Panorama image can be directly integrated into digital patient records

Panorama images of a bladder, both with (1) and without (2) the estimated path of the endoscope.

Technical details of our Cystorama software

- Runs on quad-core standard PCs with NVIDIA graphic cards
- Recording of data streams of the most common cystoscope systems with a frame grabber
- Panorama image size of up to 12 megapixels (3,000 x 4,000 pixels)
- Frame rate: 25–30 fps
- Supports most image file formats (e.g. JPEG, TIFF, PNG)
- Intuitive user interface
- Can be integrated into your own software applications

Cystorama is currently not approved as a medical product. Fraunhofer IIS is presenting Cystorama with the objective of gaining partners for further development, production, and marketing.

www.iis.fraunhofer.de/cystorama

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