System for Endoscopic Size Measurement and Mapping of Internal Organs, Tumors and other Features and Methods of Use Thereof

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How Big is this cancerous tumor? Where is it in the bladder?
Provided by Dr. Joseph Grocela, Urology, MGH
Erected holders of light beams
Endoscopic Triangulation
Endoscopic Triangulation
Endoscopic Triangulation
Endoscopic Triangulation
Endoscopic Triangulation
Endoscopic Triangulation
Calibration of examined image
Calibration of examined image

½"

¾"

1.0"

15
Calibrated examined object

\[ \frac{1}{2}'' \]

\[ \frac{3}{4}'' \]

\[ 1.0'' \]
Printed Records of a Tumor
Digital Records of a Tumor
Streamlined Endoscope
Streamlined Endoscope
Endoscope with multiple tips
How Big is this cancerous tumor? Where is it in the bladder?
Provided by Dr. Joseph Grocela, Urology, MGH
Endoscope with multiple tips
Endoscope with multiple tips
Each tip has its triangulation system
Endoscope is moved and rotated at known rates for 3-D “image from motion”
Conceptual 2-D map of bladder
We may develop global standards
for 2-D and 3-D mapping
The basic concepts could be used for numerous medical applications.

Endoscope with multiple tips
“Image from Motion”
Stitching images for mapping