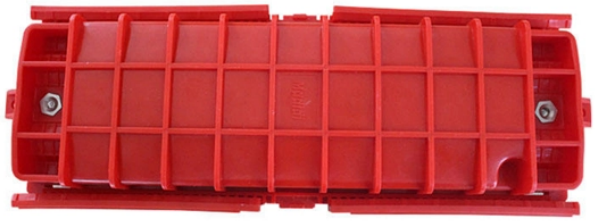
Indzawo Optic Connect

The role of fiber optic shape sensors



Overview

Fiber optic shape sensing uses embedded sensors to measure the full 3D shape of a flexible surgical device along its entire length in real time. The technology will enable cutting-edge applications in the fields of robotic and standard minimally invasive surgery – such as real-time position tracking, instrument and catheter navigation, force. Shape-sensing optical fibers have become increasingly important in applications requiring flexible navigation, spatial awareness, and deformation monitoring. Fiber Bragg Grating (FBG) sensors inscribed in multi-core optical fibers have been democratized over the years and nowadays offer a compact. Fiber optic shape sensing has an outstanding capability to sense curvature and shape in 2D and 3D.



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	Brief theory of sensing principle, fabrication method, applications, advantages and disadvantages of the different fiber-optic sensors, are addressed. ...
	Fiber Optic Shape Sensing is an innovative Optical Fiber Sensing Technology that uses a fiber optic cable to continuously track the 3D shape and position of a dynamic object (with unknown motion) in ...
	Fiber optic shape sensing uses embedded sensors to measure the full 3D shape of a flexible surgical device along its entire length in real time. By sensing the device itself from the inside, it provides ...
	This paper discusses the application of fiber shape sensing technology in related fields. It systematically reviews the latest domestic and international research progress on this technology, as ...
	This paper describes the influence of sensor distance on the accuracy of the probe and thus on the quality of the shape reconstruction. It compares four fibers with different sensor spacings and shows ...

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	Brief theory of sensing principle, fabrication method, applications, advantages and disadvantages of the different fiber-optic sensors, are addressed. Recent progress in numerous ...
	Fiber Bragg Grating (FBG) sensors inscribed in multi-core optical fibers have been democratized over the years and nowadays offer a compact and robust platform for shape reconstruction.
	The biomedical sector is currently the main integrator of fiber optic shape sensing systems. It has already found many disciplines mostly in catheter navigation and position tracking.

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