【製品紹介】

製品紹介

新しい6自由度の形状センサ SHAPE TAPE™ をご紹介します。このセンサは図1のように、柔軟なテープの形状をしており、その中にアレイ状に配置された光ファイバによって、その形状を実時間で計測することができます。インタフェースボックスは図2のように小型で、人の運動のモーションキャプチャなどにも利用できます。図3は、図1のようにSHAPE TAPE™を腕に沿わせて運動を計測した際に、製品に付属のソフトウェアによって腕の動きを可視化した例です。同様に、SHAPE TAPE™をらせん状にした場合の出力例を図4に示します。SHAPE TAPE™に関する詳しい情報は、参考情報[4]をご覧下さい。

またこの製品の紹介は、ICAT'97 のビデオショーシーディングスにも収録されています。なおSHAPE TAPE™は、Canadian Space Agencyからの単独ライセンスを受け、カナダのMeasurand Inc.が製造しています。（日本語紹介：北村喜文（大阪大学））

A new motion capture product requires no cameras or magnetic fields. It measures the shape of a thin, flexible ribbon that carries an array of fiber optic curvature sensing SHAPE SENSORS™ [1][2]. The sensors are mounted at angles on the ribbon to measure bend and twist. Since a ribbon is only capable
of bending and twisting, information from the sensors can be used to determine where every part of the ribbon is in three-dimensional space.

This product, called SHAPE TAPE™ [3][4], was developed as part of a two year project to develop an advanced Human Machine Interface called SmartMove [5]. In SmartMove, a human operator controls a two-armed robot with shape signals from SHAPE TAPE™ mounted on his or her arms. The tape "knows where it is" in full 3D, including all positions and orientations, so the operator is able to control multiple joints of the robot in six degrees of freedom. Because the tape is self-referencing, it does not need to be in full contact with the arms. It can pass over difficult parts like the shoulder and elbow, and still properly locate the other parts of the arm.

SHAPE TAPE™ includes software for producing continuous real time images of the shape of the ribbon. A new version also produces numbers from the entire surface of the tape, available as a file, or for communication over ethernet or a serial port. Other versions are designed for very high speed, non-multiplexed, data acquisition at bandwidths of 16 kHz or more. SHAPE TAPE™ is being used for VR, medical, crash testing, simulation, and CAD input applications. It permits sensing where cameras cannot see, such as in seating design or medical diagnostics. It can be made without metallic components for operation in high magnetic fields without distortion or interference.

References
[3] SHAPE TAPE™ is produced by Measurand Inc. under a sole license from the Canadian Space Agency (patents pending).