

# Magnetic wireless motion capturing system and its application for jaw tracking system and 3D computer input device

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## 1. Jaw tracking system

We present the new jaw tracking system that utilizes five degrees of freedom of head and lower jaw. The proposed method does not disturb the physiology because the system does not need to fix magnetic field sensors or clutch on the patient's body or mouth. The impact of this result goes beyond the conventional optical and magnetic tracking system of jaw movement [1][2]. Position accuracy within 1mm and reasonable cost is necessary for practical use of the jaw tracking system. The most important point is how to arrange sensors and magnets, whether conventional fluxgate sensors (not so small size) is applicable because of size problem to obtain desired position accuracy within 1mm. In this paper we investigate the error source of the jaw tracking system of Fig. 1, and we present the position accuracy within 1 mm.

## 2. 3D computer input device

We developed the 3D computer input device which is composed of wireless small marker (permanent magnet) and planar type fluxgate sensors as shown in Fig. 2. The position and orientation of the magnetic maker are obtained by the least square method using measured magnetic field. The magnet is attached to the finger and free from electrical wire. The device is useful to detect hidden objects and provides low cost system. The five degrees of freedom (position and orientation) are detectable.

## References

[1]Naso-hexa-graph catalog, GC Dental Japan Co., Ltd. (1999). [2] Sirognathograph Analyzer System catalog, Tokyo Dental Industrial Co., Ltd. (2002).

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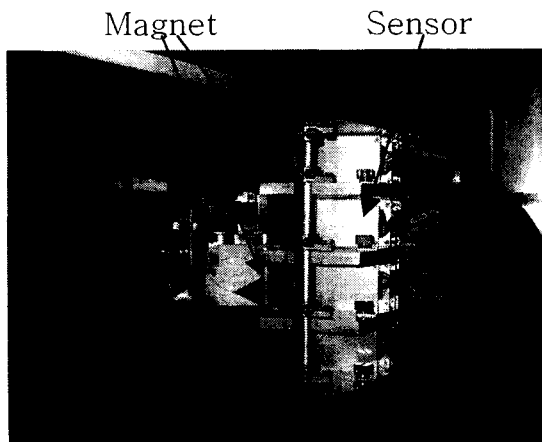


Fig.1 Jaw tracking system.

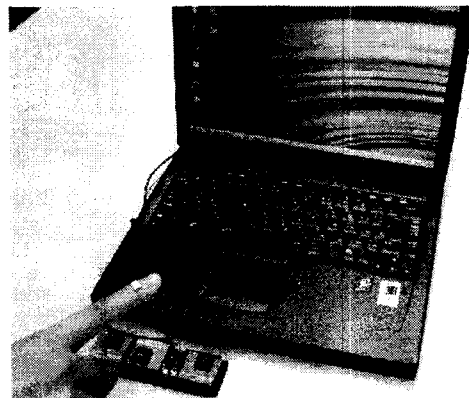


Fig. 2 3D computer input device.