**EQUIPMENT DESCRIPTION**

The F.Y.D. (Fabric Yielding Display) is a new display which conveys to subjects both cutaneous and kinaesthetic information. It is based on a layer of bi-elastic fabric which can be touched by subjects with their forefinger. The fabric elasticity is changed according to the desired softness to be felt by subjects. The system is composed of:

- A hollow plastic cylinder containing a DC motor, controlled using a Sabertooth Syren 10 dual motor driver (bidirectional movement);
- A thin layer of bi-elastic rectangular shaped fabric (Superbiflex HN by Mectex), which is placed on the top of the hollow cylinder and it is tied to a circular crown which can run outside along the cylinder.
- A screw, which is jointly connected to the axis of the motor while a female screw is attached to the crown by means of four supports.
- The rotational movement of the motor is converted by the female screw into a translational movement of the crown.
- The position of the crown can be acquired (National DAQ system PCI6036E) by an external potentiometer, and, consequently, set the input voltage for the motor in order to reach the desired position, i.e. the desired stretching of the fabric.

**CHARACTERIZATION**

The system was characterized in terms of force-displacement and force-area provided by the fabric under different levels of stretching (i.e. position of the crown: range 0 - 30 mm, step of 3 mm). Starting from these results, it is possible to interpolate the position of the crown which allows to render a fixed value of stiffness.

**RESULTS**

- A more realistic way of rendering softness;
- No edge effects;
- A real-time measurement of the contact area spread.

**FUTURE WORK**

- A direct real-time measurement of the forces and of the indentations;
- A statistically significant number of tests, to compare the tactual discrimination using F.Y.D. with the results obtained with other tactile display (C.A.S.R.).