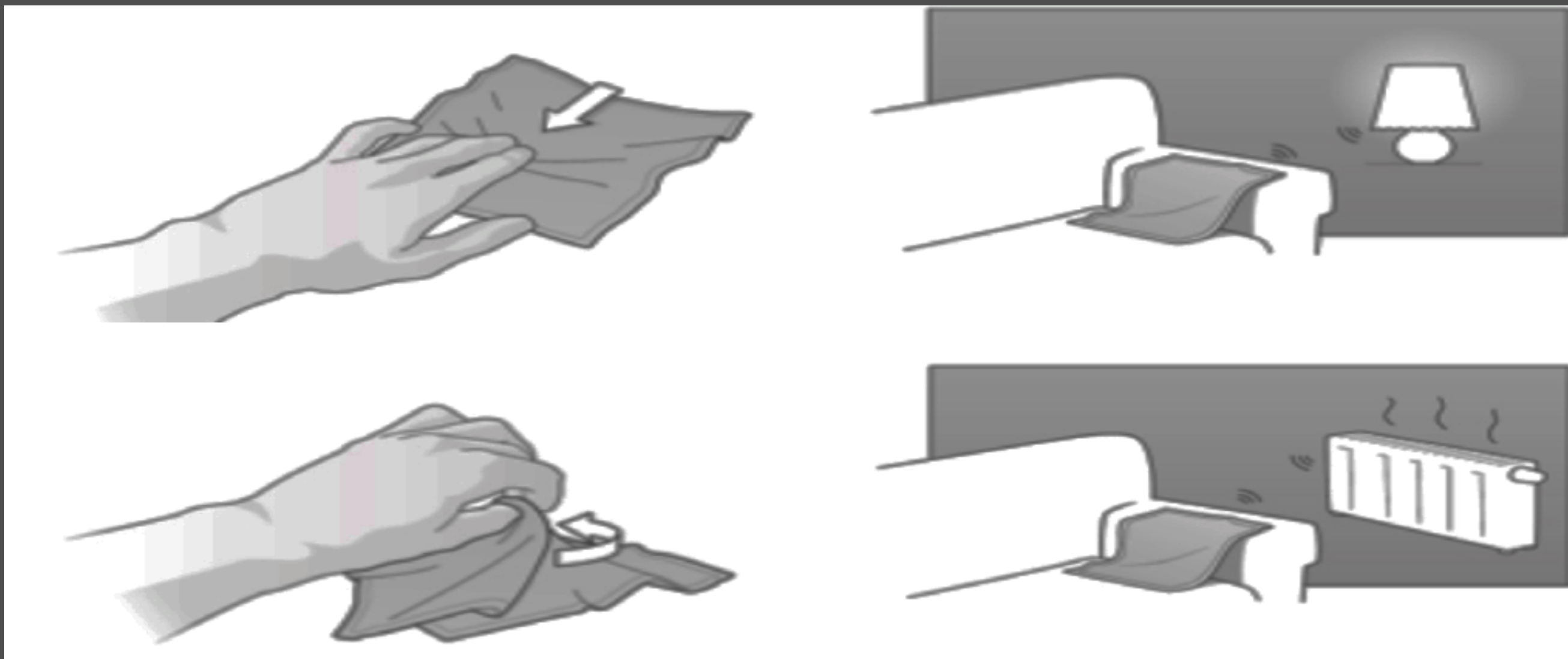# Towards an Intuitive Textile Input Controller

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Textile interfaces are often imagined as being integrated into clothing. While this is the most prominent use of fabric, we present a standalone interface that builds on the natural set of interactions a piece of fabric affords, and that is feasible for industrial production. By integrating stitched patterns made of conductive thread into a square piece of fabric, we are able to sense established connections within this pattern and map these to a model how the cloth is folded. An integrated microcontroller tracks these connections and communicates them as two-dimensional continuous value changes to a host application.

Prototype

We use a stitched pattern of conductive thread on a piece of cloth. When folded, some of the square patches get connected to each other, which the connected microcontroller detects easily.
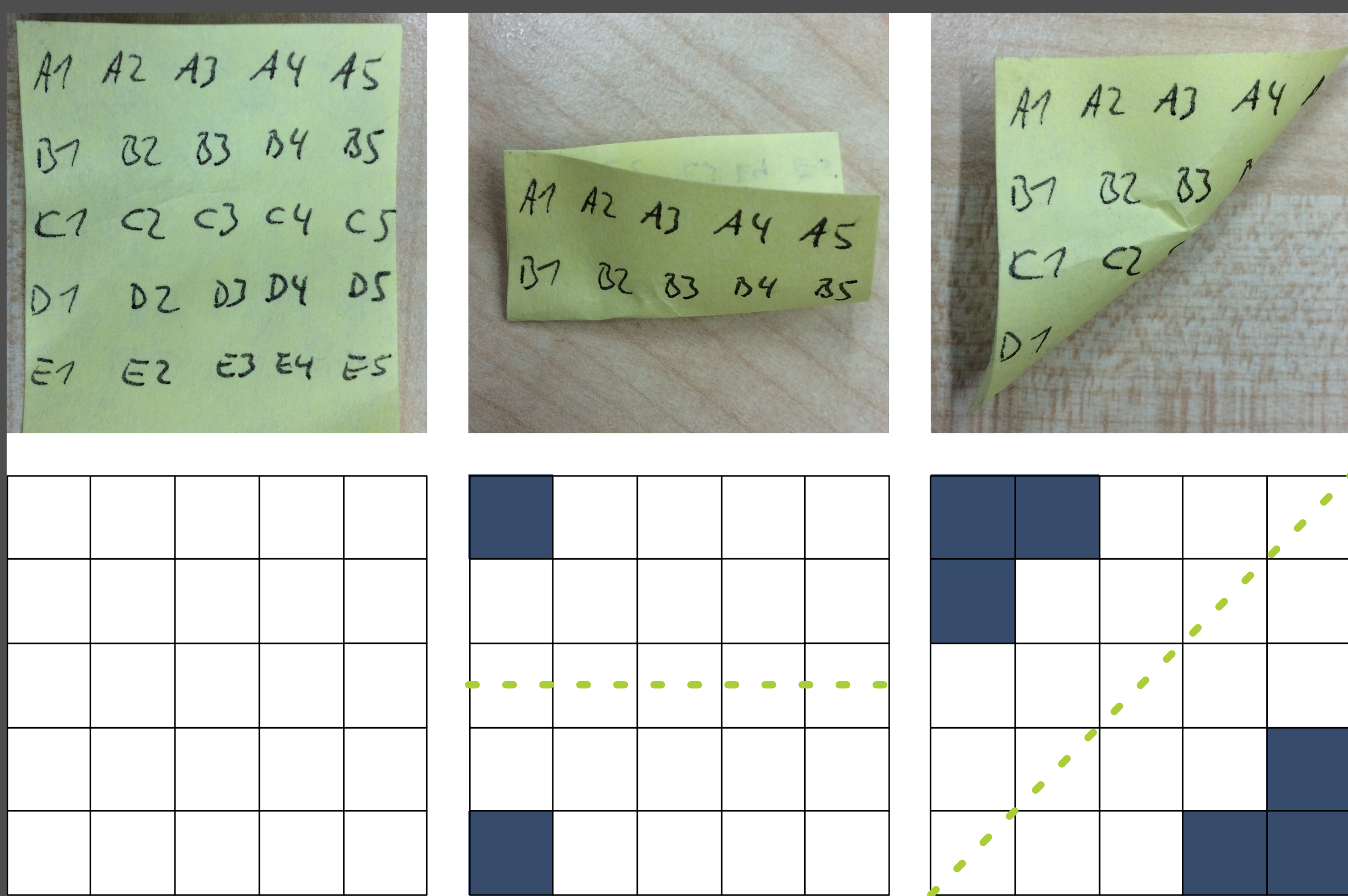
The connection matrix represents the interconnections, as illustrated in Figure 3. Under ideal circumstances, the fold in the cloth is represented with the axis of symmetry of the matrix, while the maximum distance on both dimensions represents the size or torsion of the fold. If the user grabs the entire cloth firmly, a large number of connections will arise and this can be detected as a crumpling gesture.
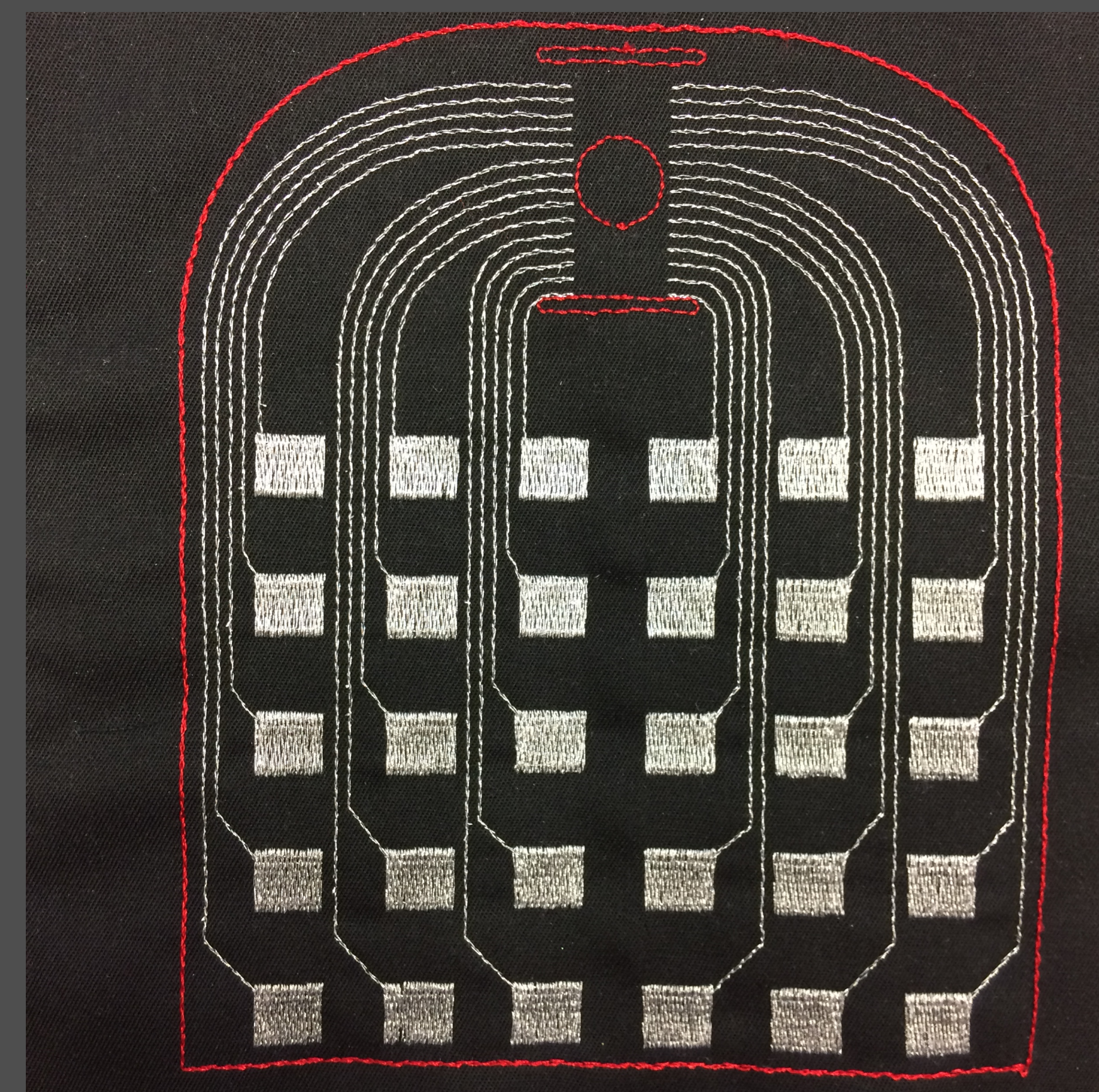
Electrical connection

We use a clipping mechanism to connect the conductive fabric to the elecontrics. The conductive thread is firmly pressed against conductive plates on the bottom side of the PCB by a plastic clip. This has the advantage that no sharp edges slowly cut into the yarn and thereby reduce its conductivity, and that the PCB can be removed before washing and clipped to another piece of fabric.

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