

DEVELOPMENT OF TEXTILE-BASED RESISTIVE PRESSURE SENSING SOCKS IN DIABETES MELLITUS FOR EARLY DETECTION OF DFU

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Abstract: The aim of this research is to develop textile-based resistive pressure sensing socks for diabetes mellitus patients for early detection warning system. In order to succeed this aim, three conductive fabrics are separated by two different non conductive fabrics which have divergent sizes. Sensors are simple to manufacture, practical, washable and easy to utilize. Bigger mesh size fabrics were implemented to the upper side and smaller mesh size fabrics were simultaneously placed to the lower part of the structure. The electrical resistance of the soft resistive sensors was measured under different loads. Impact of mesh sizes were also analysed. It was found that while bigger mesh size increases the sensitivity, smaller mesh size decreases. On the other hand, bigger mesh size reduces the working range of sensor whereas smaller one raises. This discrepancy can be utilized for medical applications in order to measure pressure disparities under foot in particular for diabetes mellitus.

Keywords: soft pressure sensors, resistive pressure sensing, diabetes mellitus

	Working range 1	Working range 2
	Kpa	Kpa
Low Sensor	3-40	40-80
High Sensor	55-70	70-85

Table 1 Working range of the sensors

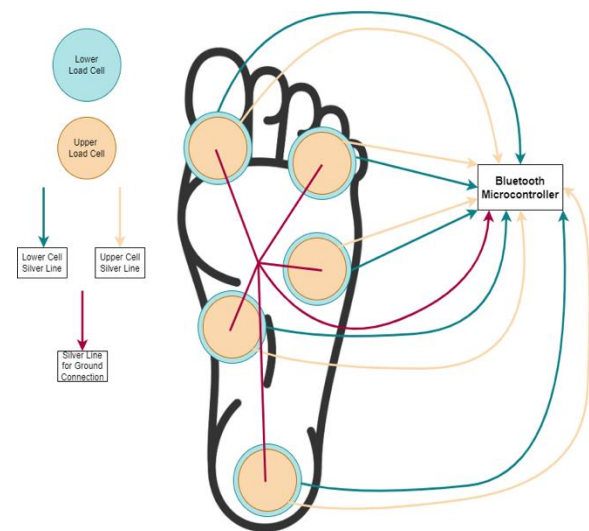


Figure 1 Working mechanism of the design

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