

Version for modified nodal array approach in foot plantar pressure measurement system

Fairuz Rizal Mohamad Rashidi^a, W.Z.W. Hasan^b, M.N. Hamidon^b, S. Shafie^b

^a Faculty of Electrical & Electronics Engineering, University Malaysia Pahang, Pahang, Malaysia

^b Department of Electrical and Electronic Engineering, Universiti Putra Malaysia, Selangor, Malaysia

ABSTRACT

In this paper, we constructed and compared four version of varying mechanism for modified Nodal Array Approach (NAA) in foot plantar pressure measurement system. In order to achieve NAA goals in having low circuit complexity while maintaining simple reading and solving algorithm, the varying mechanism part needs to be designed carefully by considering the factors such as low in sensor calculation error, component usage and complexity as well as algorithm size. 31 experiment conditions has been tested on these readout circuits with different varying mechanism where the results was presented, analyzed and discussed. A conclusion has been made where the Switch version has been selected to be the most suitable varying mechanism for the modified NAA readout circuit.

KEYWORDS

Resistive readout circuit; Resistive sensor array; Foot plantar application

REFERENCES

1. A. H. AbdulRazak, A. Zayegh, R. K. Begg and Y. Wahab, "Foot plantar pressure measurement system: A review", *Sensors*, pp. 9884-9912, 2012.
2. F. R. M. Rashidi, O. Hussein and W. Z. W. Hasan, "Investigation on developing of a piezoresistive pressure sensor for foot plantar measurement system" in *In Micro and Nanoelectronics (RSM) 2015 IEEE Regional Symposium on, IEEE*, pp. 1-4, August 2015.

3. L. Shu, X. Tao and D. D. Feng,
"A new approach for readout of resistive sensor arrays for wearable electronic applications", *IEEE Sensors Journal*, no. 1, pp. 442-452, 2015.
4. W. W. Hasan, F. R. M. Rashidi, M. N. Hamidon and Y. Wahab,
"Design of Readout Circuit for Piezoresistive Pressure Sensor Using Nodal Array Approach Reading Technique", *Pertanika J. Sci. & Technol.* 25 (S), pp. 215-224, 2017.
5. O. Hussein, W. W. Hasan, A. C. Soh and H. Jafaar,
"Investigation on touch area of under foot pressure based-on weight measurements", *In The 7th International Conference on Engineering and Technology*, 2015.