

ABSTRACT

Weighing scales and measuring weights are widely used at integrated service posts around the community and are always used for monitoring the growth and development of toddlers. The community always monitors the growth of toddlers because the toddler years are a golden time and are very vulnerable to diseases such as stunting, malnutrition, and others. However, in the systematic measurement of weight and height of toddlers, it is very complicated and takes up a lot of space and manpower. There have been many things that have been done by the Bandung city government, especially in monitoring the growth and development of toddlers which must be recorded every 8 times a year.

In this final project, the author is designing a weight and height measuring instrument that uses a strain gauge and ultrasonic sensor. Data were collected for toddlers' gender, height, and foot length to get the formula for the approach to the length of the soles of the feet and height to be directly proportional. To get the length of the sole of the foot, an ultrasonic sensor will be used and then calculated in Arduino nano using the approximate formula for the length of the foot and height. The toddler's weight will be measured with a strain gauge sensor and then connected to the HX711 module as an analog to digital converter. The measurement results of the ultrasonic sensor and strain gauge sensor will be received by the Arduino nano microcontroller then the received data will be calculated and displayed on the Liquid Crystal Display 16x4.

The result of testing the device is to produce a tool that can detect foot length of toddlers using ultrasonic sensor with 99.042% accuracy with 43 toddler subjects and 0.002% precision. The strain gauge successfully read the load of toddler resulting in 99.707% accuracy and 0.001% precision. Body height measurement using 2 different linear regression resulting accuracy in 97.042% for male toddler, for the female 97.822% and the precision level is 0.004%.

Keyword: Weight Scale, Arduino Nano, Toddler, Ultrasonic Sensor, Liquid Crystal Display