

Pressure Sensor's Pneumatic Testbed

Ana Claus¹, Borzooye Jafarizadeh¹, Azmal Huda Chowdhury¹ Nezhil Pala², Chunlei Wang¹

¹Department of Mechanical and Materials Engineering

² Department of Electrical and Computer Engineering

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Currently, several studies and experiments are being done to create a new generation of ultra-low-power wearable sensors. For instance, our group is currently working towards the development of a high-performance flexible pressure sensor. However, with the creation of new sensors, a need for a standard test method is necessary. Therefore, we opted to create a standardized testbed to evaluate the pressure applied to sensors. A pulse wave is generated when the heart pumps blood causing a change in the volume of the blood vessel. In order to eliminate the need of human subjects when testing pressure sensors, we utilized polymeric material, which mimics human flesh. The goal is to simulate human pulse by pumping air into a polymeric pocket which is deformed. The project is realized by stepper motor and controlled with an Arduino board. Furthermore, this device has the ability to simulate pulse wave form with different frequencies. This in turn allows us to simulate conditions such as bradycardia, tachycardia, systolic pressure, and diastolic pressure.

