

Eris-Detect If You're Lying

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Introduce

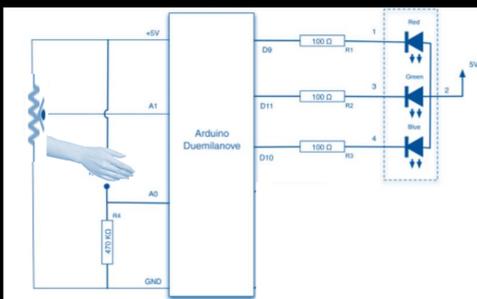
When we're telling the lie, our *Sympathicus* will work to make the brain work hard to tell the lie more fluently. This is a nature reaction and it will cause many phenomenon which we can detect and judge if the subject are nervous, which may mean they are not telling the truth. At all the reactions, we decide to use the value change of the skin and the rate change of heart beat to judge if the subjects are telling truth.

Principle

We use both the heart beat and GSR (galvanic skin response). Our skin is a kinds of electrical conductor, which can be thought as a resistor. This value have a wide range from 10^4 to 10^7 . This value will change if someone is telling the lie because people will sweat, which will make the impedance smaller.

Detect the skin resistance

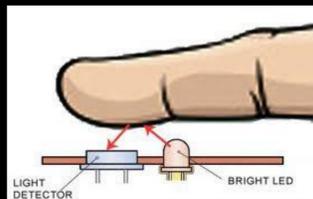
we use a simple circuit, which we can get the value of our body resistance. The total value of our body and resistors will be the ratio of the origin voltage and the voltage at A_0 that be the basic to the LED pin mode.



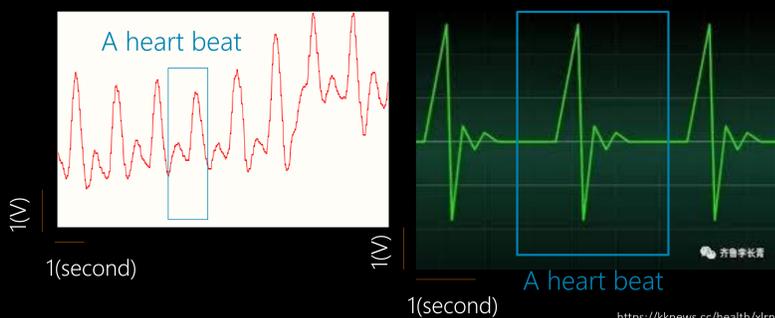
http://www.honfablab.org/wordpress/alexandria/technology/30Arduino_Projects_EviGenius.pdf

Heart beat detection - XD-58C

Because flesh blood is much redder than the used one, we can detect it and know if the fresh one is sent to the figure. With a line sensor and a green LED, when the pulse sensor does not contact with any finger, earlobe or other part, the analog signal is maintained at the stable voltage. When we press the finger on the device, whenever the heart pumps blood more light is absorbed by increased blood cells and we will observe a decrease in the intensity of light received on LDR.

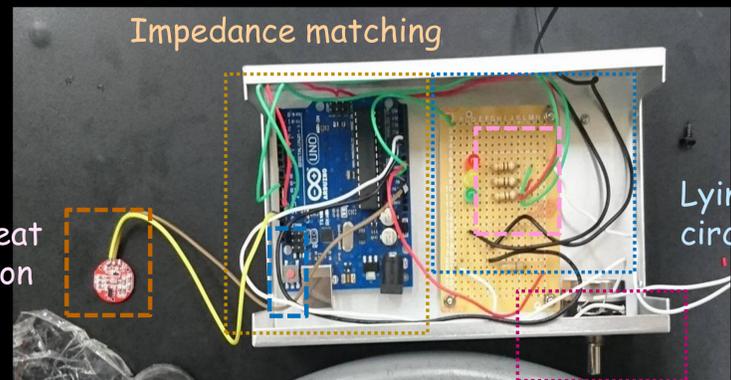
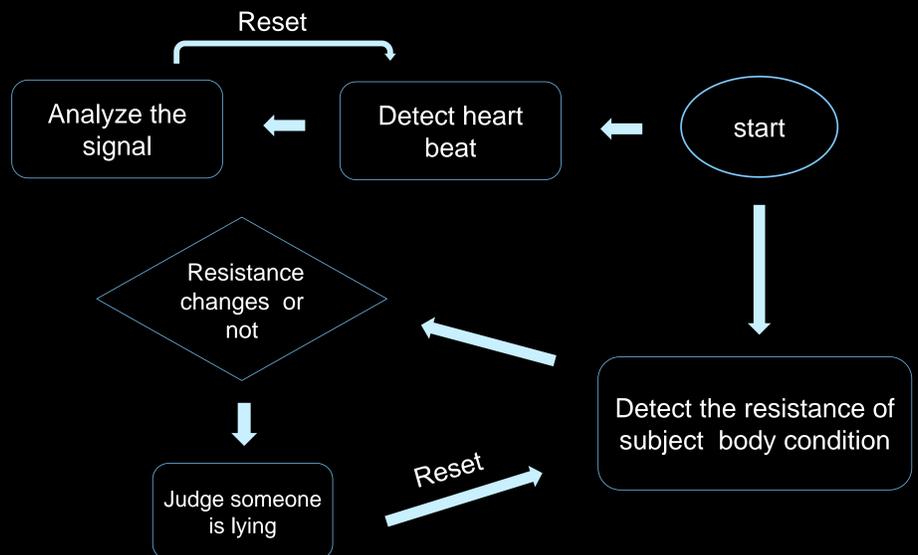


<http://www.raviyp.com/embedded/140-learn-how-a-heart-beat-sensor-works>



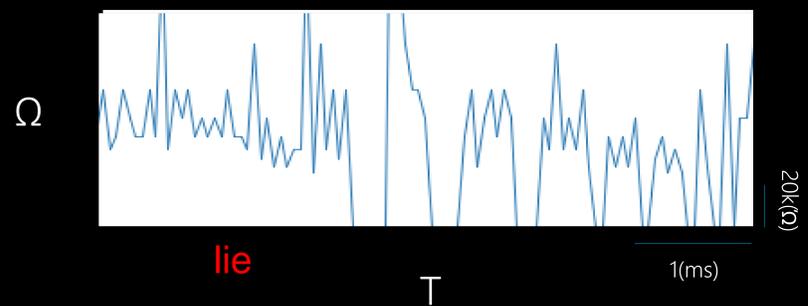
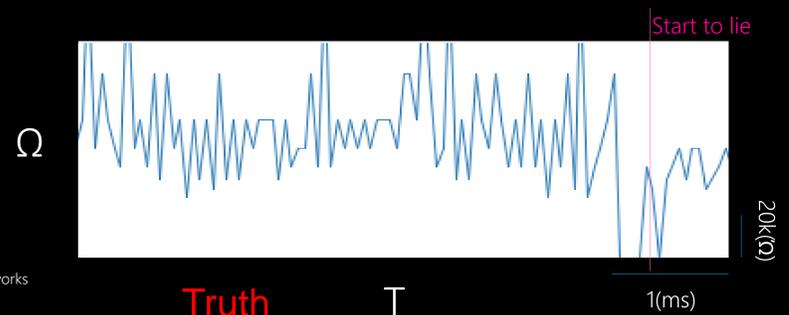
<https://kknews.cc/health/xlrnl8.html>

Lying or not ?



Variable resistor

Temporal evolution of body resistance



Conclusion

Emotion will affect the resistance of human body, the skin resistance is much lower if it is wet or burnt/blistered. When people sweat (sweating because they're lying), the lying detector can detect the change of resistance due to sweating and make response.

The polygraph to combine the psychology to improve the accuracy. Physiological measures used in the polygraph suggest that further investments in improving polygraph technique and interpretation will bring only modest improvements in accuracy.

Reference

- http://www.honfablab.org/wordpress/alexandria/technology/30Arduino_Projects_EviGenius.pdf
- https://github.com/WorldFamousElectronics/PulseSensor_Amped_Arduino
- http://eeproject.ncut.edu.tw/upload/Achievements/102_39.pdf