AD8232

3 RA
2 LA
1 RL

GND 3.3V OUTPUT LO- LO+ SDN
4 5 6 7 8 9

GND

FONA808 GPRS GPS Module

1 5V Charge
2 BATT
3 GND
4 VIO
5 RST
6 RX
7 TX
8 RTS
9 Key
10 RI
11 PS
12 NS
13 Mic+
14 Mic-
15 Spkr+
16 Spkr-

D4
D2
D3

GND

Raspberry Pi 3 Model B

2 5V
4 5V
1 3.3V
17 3.3V

29 GP5
31 GP6
32 GP12
33 GP13
36 GP16
35 GP19
38 GP20
40 GP21
37 GP26

B+

6 GND
9 GND
14 GND
20 GND
25 GND
30 GND
34 GND
39 GND

SDA 3
SCL 5

TXO 8
RXI 10

SCLK 23
MISO 21
MOSI 19
CE0 24
CE1 26

GP4 7
GP17 11
GP18# 12
GP22 15
GP23 16
GP24 18
GP25 22
GP27 13

ID_SD 27
ID_SC 28

B+

GND

Raspberry Pi 3 Model B Ports

USB01
USB02
USB03
USB04
HDMI

Arduino Nano

1 D1/TX
2 D0/RX
3 RESET
4 GND
5 D2
6 D3
7 D4
8 D5
9 D6
10 D7
11 D8
12 D9
13 D10
14 D11/MOSI
15 D12/MISO D13/SCK

VIN 30
GND 29
RESET 28
+5V 27
A7 26
A6 25
A5 24
A4 23
A3 22
A2 21
A1 20
A0 19
AREF 18
3V3 17
16

USB

D2
D3
D4

GND

MAX30205

1 SDA VDD 8
2 SCL A0 7
3 OS A1 6
4 GND A2 5
THERM EXP

GND

USB
HDMI

Raspberry Pi 7 inch LCD

USB

Keyboard

USB

Mouse

```
     ( Start )
         │
         ▼
   ╱───────────────╲
  │ Get ECG analog  │◄──────────────( B )
  │     data.       │
   ╲───────────────╱
         │
         ▼
  ┌─────────────────┐
  │ Add ECG data to │
  │      list.      │
  └─────────────────┘
         │
         ▼
  ┌─────────────────┐
  │ Record highest  │
  │      peak.      │
  └─────────────────┘
         │
         ▼
  ┌─────────────────┐
  │ Record lowest   │
  │     peak.       │
  └─────────────────┘
         │
         ▼
    ◇───────────◇        No
   │ 30 seconds  │──────────────┐
   │  passed?    │              │
    ◇───────────◇          (to B above)
         │  Yes
         ▼
  ┌─────────────────┐
  │ Get all ECG     │
  │ readings within │
  │ 5% tolerance of │
  │ the highest     │
  │ peak.           │
  └─────────────────┘
         │
         ▼
  ┌─────────────────┐
  │ Get all ECG     │
  │ readings within │
  │ 5% tolerance of │
  │ the lowest      │
  │ peak.           │
  └─────────────────┘
         │
         ▼
       ( A )
```

```
       ( A )
         │
         ▼
  ┌─────────────────┐
  │ Count number of │
  │ highest peak    │
  │ within          │
  │ tolerance range.│
  └─────────────────┘
         │
         ▼
  ┌─────────────────┐
  │ Count number of │
  │ lowest peak     │
  │ within          │
  │ tolerance range.│
  └─────────────────┘
         │
         ▼
  ┌─────────────────┐
  │ Get the absolute│
  │ value of the    │
  │ difference      │
  │ between number  │
  │ of highest peak │
  │ and lowest peak.│
  └─────────────────┘
         │
         ▼
  ┌─────────────────┐
  │ Multiply that   │
  │  value by 2.    │
  └─────────────────┘
         │
         ▼
  ┌─────────────────┐
  │ Output          │
  │ respiratory     │
  │ rate.           │
  └─────────────────┘
         │
         ▼
    ◇───────────◇     Yes
   │ ECG window  │──────────►( B )
   │  active?    │
    ◇───────────◇
         │ No
         ▼
     ( End )
```

Yung algorithm ng ECG based lang sa number of inspiration and experiation using yung highest peak saka lowest peak.
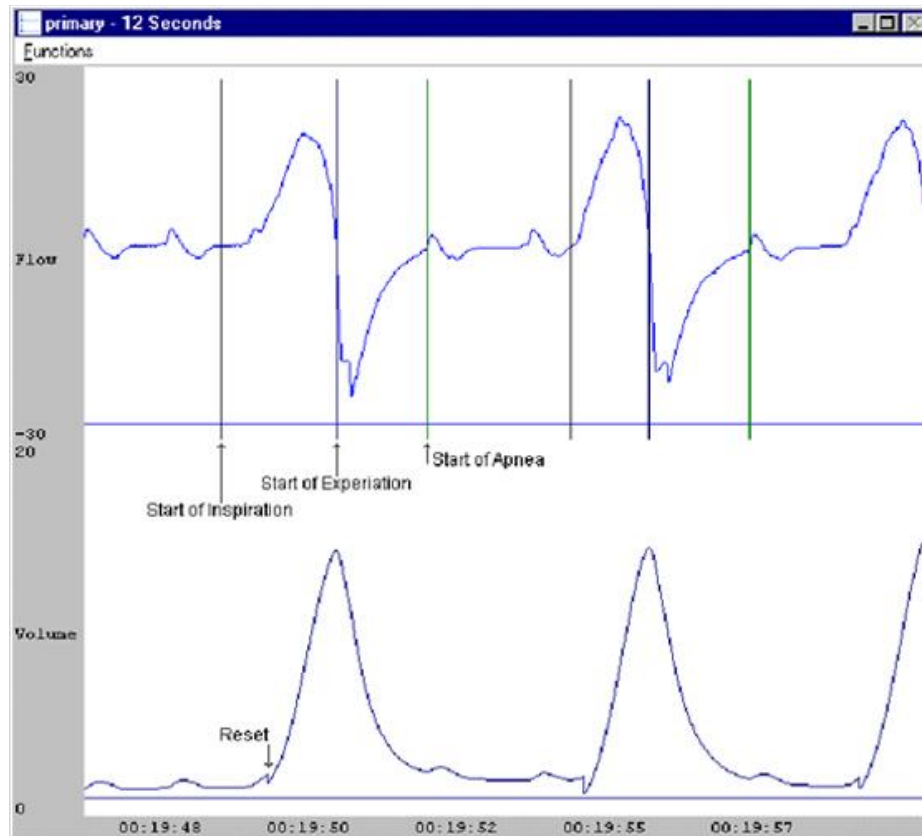
Yung isang letter "S" na nakahiga tas may buntot, isang hinga yun. Every 30 seconds minemeasure yan, and mumultiply by 2 para makuha yung respiration rate.

Yung may count count ng peak na sinasabi ni Dennis is pang unfiltered signal na algorithm yun. Yung sa sensor is expected na filtered na yung data nun.