# Mini Security Alarm using a ~~Raspberry Pi~~ AML-S905X-CC aka Le Potato

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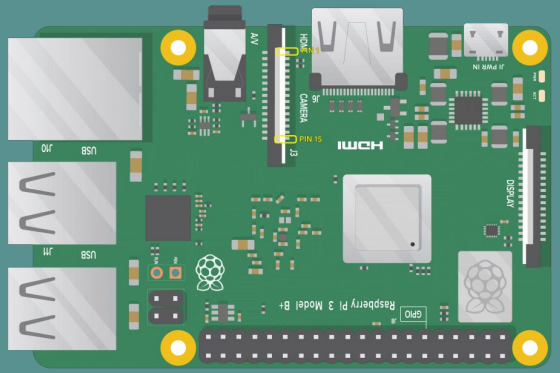
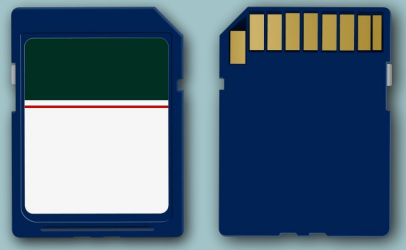


# What We Used

- **AML-S905X-CC (Le Potato)**
- **32GB microSD CARD**
- **Adafruit PIR Motion Sensor**
- **3-24V Electronic Buzzer Alarm Sounder**
- **Soldering Kit**

Specs:
- o Amlogic S905X SoC
- o 4 ARM Cortex-A53 @ 1.512GHz
- o 2G + 3P ARM Mali-450 @ 750MHz
- o Amlogic Video Engine 10
- o Up to 2GB DDR3 SDRAM
- o 4 USB 2.0 Type A
- o 100mb Ethernet
- o 3.5mm TRRS AV Jack
- o HDMI 2.0
- o MicroUSB Power In
- o MicroSD Card Slot
- o eMMC Interface
- o IR Receiver
- o U-Boot Button
- o 40 Pin Low Speed Header (PWM, I2C, SPI, GPIO)
- o Audio Headers (I2S, ADC, SPDIF)
- o UART Header



# The Process

- Wanted a security based project
  - Useful and productive in real world setting
- Sensors and Alarms !
  - Together could be used to make a motion-oriented alarm system - premise of the project
- Researched parts and made purchases
  - Came to conclusion that Raspberry Pi was too expensive
  - Alternative -> AML-S905X-CC (Le Potato)
  - PIR sensor -> measure infrared light in objects field of view
  - Piezo speaker -> give sound for detection
  - Breadboard -> security and efficiency for the pins to be worked on (would not be implemented later)
  - 100-ohm resistor -> limited PIR sensor power (would also not be implemented later)
- Find efficient environment to use

# The Trials and Tribulations

- What OS to use?
  - Armbian vs Raspian
- Armbian
  - Efficient connection to board
  - But didn't detect many functions used
- Raspian
  - Difficult to traverse, unfamiliar
  - Resulted in switch back to Armbian (similar enough to Linux)
- Finding a suitable library (will be revisited in next slide)
  - Found libgpiod
- Managing electrical connections with the components
  - Breadboard did not come in handy (janky)
- Learning how to Solder
- The Board itself...
  - Limitations (on next slide)

# Trials and Tribulations (cont.)

- The Problems with the AML-S905X-CC
  - Didn’t like the keyboard
  - Lack of power
  - Little to NO documentation to be found
  - Had to traverse unsafe forums for information
  - Board creator has poorly managed website
    - Broken links!
    - Outdated tutorials (like none past 2018)
    - Inactive forums (with expired certificates)
  - Called for heavy research on functions and libraries

# Happy Conclusion !!!

- Project was completed!
- Learned a lot about basics of hardware development
- Learned spending the extra $$$ for a Pi is sometimes worth it