

Chapter 1

System specifications

1.1 Product requirements

- Name: Streaming video with STM32 MCU.
- Purpose: Streaming video or other system using the embedded system.
- Inputs and outputs:
 - Inputs:
 - * OV7670 camera module.
 - Outputs:
 - * Display the video on the Pc's screen.
- Use case:
 - Streaming video with 160x120 resolutions(at RGB565 format).
 - Streaming video with 160x120 higher qualification(at YCbCr format).
- Use case diagram
- Functions: Streaming video jpg format can decrease bandwidth of COM port or TCP connection.
- Performance: about 5fps¹.
- Manufacturing costs:

Table 1.1: *List of device and costs*

Devices	Quantity	Costs
STM32 Nucleo Board	1	503.000đ
OV7670 Camera (Non Buffer)	1	62.000đ
Uart to USB CP2102	1	39.000đ
Total		604.000đ

¹frame per second

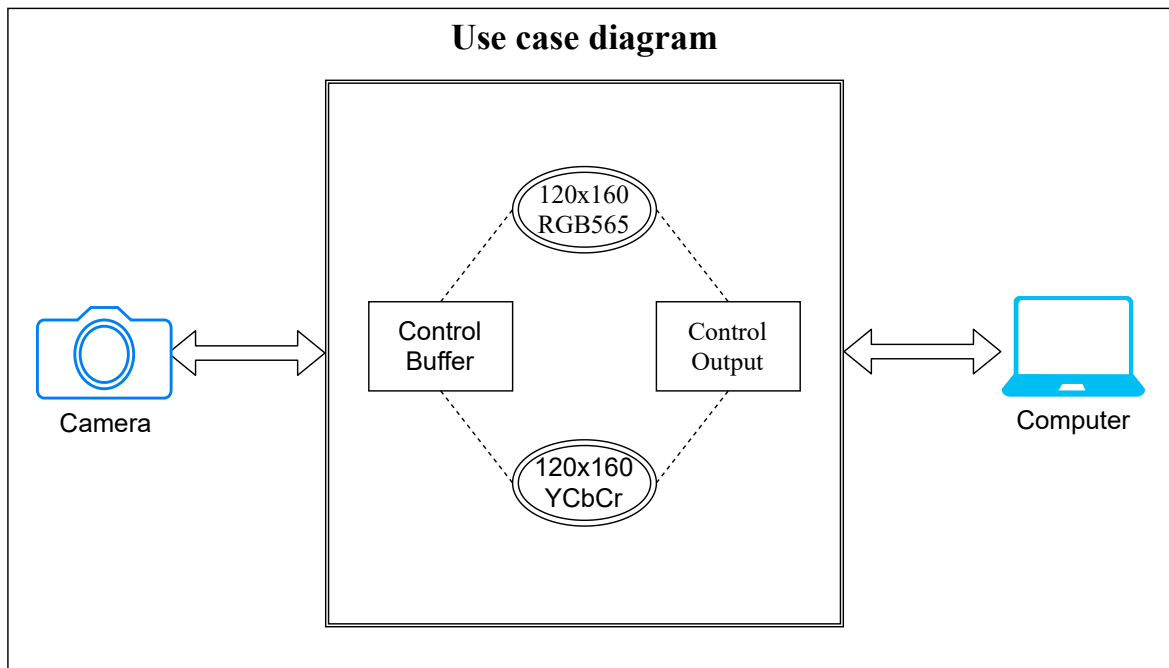


Figure 1.1: Use case diagram

- Power supply: USB Cable 5V
- Physical size and weight:
- Installation and working enviroment:
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1.2 Design specification

In several points of view, the system contains three main blocks: Camera block, Stm32 board, and screen display (Pc ²). The embedded camera, OV7670 has 640x480 resolutions. However, the main core of stm32f446re (Cortex M4) has a maximum 180Mhz clock, and We don't use SRAM. Therefore, the image resolution output is 160x120 with RGB565 formatted color and is 320x240 with YCbCr formatted. The image rate is about 5fps. The resolution and Color format can control by Pc GUI³. The system is powered by a USB 5v connector.

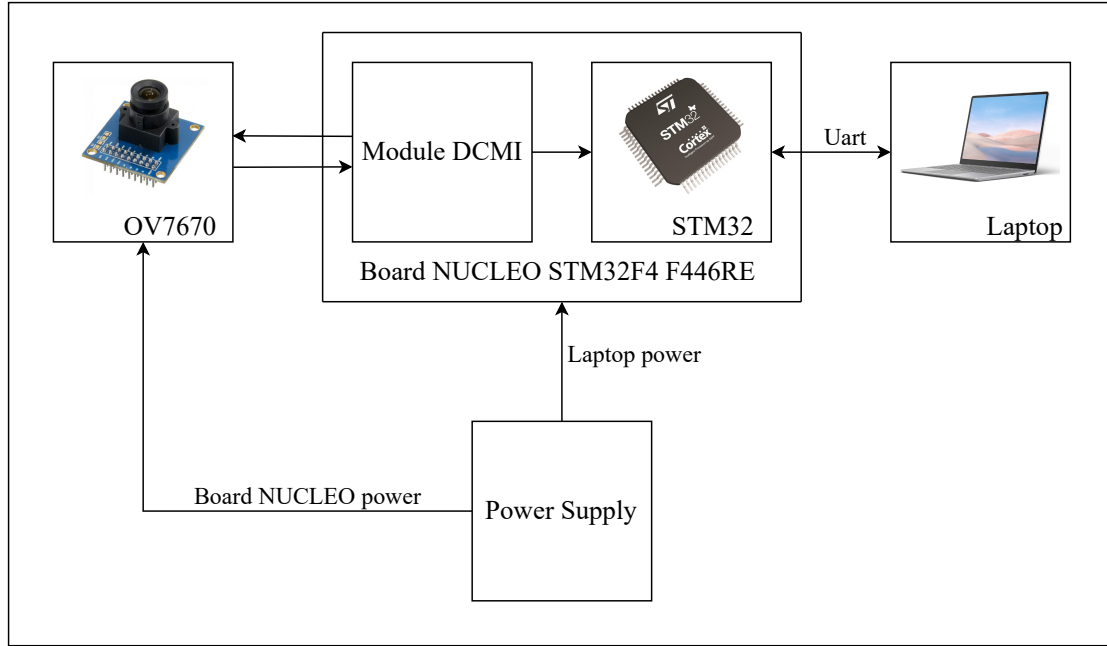


Figure 1.2: *System Architecture*

²Personal Computer

³Graphical User Interface