

Maxwell Jung
Baron Young
Feb 21, 2023

Project Proposal: Digital Camera

Overview:

Create a digital camera capable of capturing and saving a photograph. A pre-made camera module will capture the image, and TFT LCD will preview the captured image in real time. The user can press a button (either on the touchscreen LCD, pushbutton on Nucleo board, or clicking rotary encoder) to save the previewed image to the microSD card.

Major challenges of this project will be:

1. Configuring the Camera, Display, and microSD card
2. Capturing, processing, and displaying the image in real time,
3. Reading/Writing the image from/to disk without data corruption

Optional features (if time permits):

- Touchscreen UI
- Portability (perhaps via the use of portable battery bank)
- Video Recording (likely impossible)
- Flash Photography (doable, but low priority)

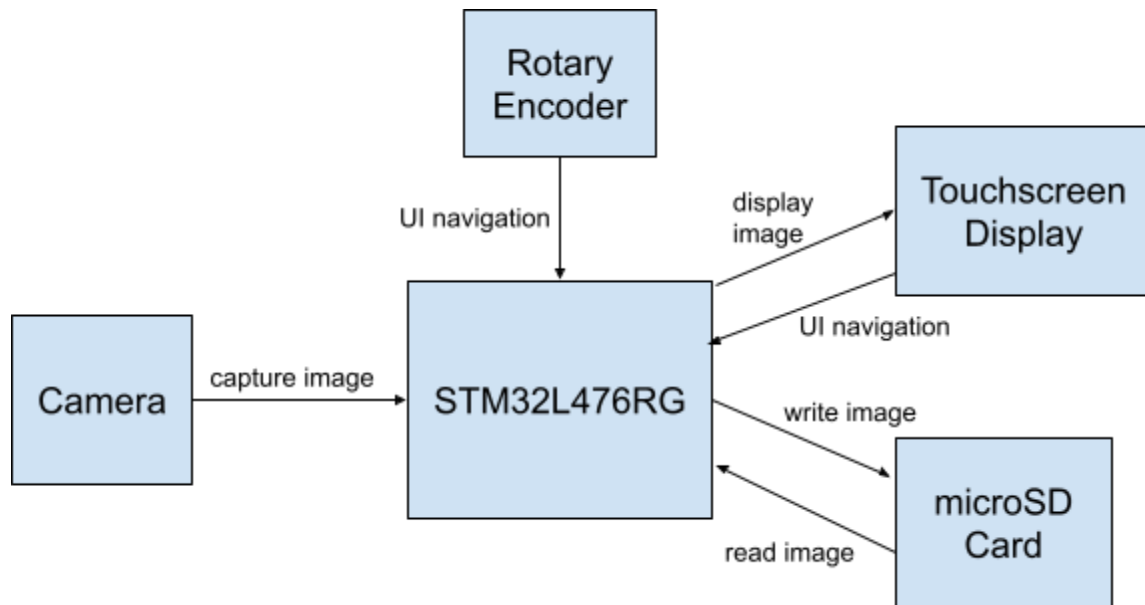
Peripherals:

- Camera module
 - <https://www.amazon.com/Arducam-Module-Megapixels-Arduino-Mega2560/dp/B012UXNDOY> (this is just the first search result for “camera module arduino”)
- LCD screen
 - <https://www.adafruit.com/product/1770> (same LCD screen from ECE153A)
- microSD card
 - <https://www.westerndigital.com/products/memory-cards/sandisk-ultra-uhs-i-microsd#SDSQUNC-016G-AN6MA>
 - https://www.amazon.com/Integrated-Circuit-Interface-Raspberry-Breakout/dp/B08C4WY2WR/ref=sr_1_6?crid=7X3XLY2KIY0P&keywords=arduino+micro+sd+card+module&qid=1677008609&sprefix=arduino+micro+sd+card+module%2Caps%2C137&sr=8-6

Serial Interface Protocol:

- SPI (camera data, display, and microSD)
- I2C (camera sensor)

Block Diagram:



Responsibilities:

- Maxwell
 - Maintain Project Website
 - Configure Camera UI
 - Configure microSD Card
- Baron
 - Source parts
 - Configure Camera
 - Configure LCD

Website:

- mwjung.com/digital_camera (same url as maxwelljung.github.io/digital_camera)
 - source code: <https://github.com/MaxwellJung/MaxwellJung.github.io>