Sci-Fi Cam

Primary contact for the team

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Team

Mihails Delmans : Hardware/Software design

Summary

Sci-Fi Cam is a Raspberry Pi - based camera for taking color images from a compound or stereo microscope, featuring synchronisation of images via Wi-Fi and time-lapse capability.

Proposal

Professional scientific cameras are expensive, and often require specialised software and dedicated computer to operate them. DSLRs or mirrorless cameras are less expensive, but are bulky and limited in functionality. The goal of the project is to design a cheap and portable color camera that is fit for taking bright-field images from a stereo or a compound microscope.

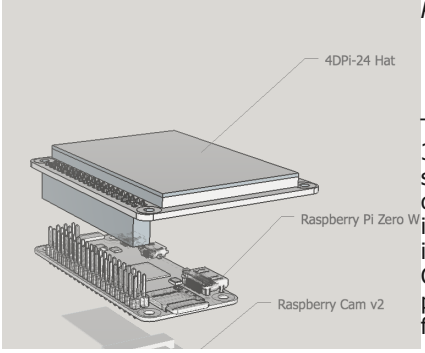
Design specification:

Hardware:

- Be small enough to fit in a pocket
- T-mount port
- Display for preview
- Rechargeable battery
- Can be assembled only with a screwdriver / allen key

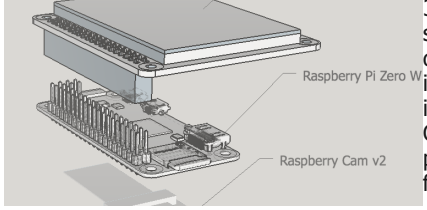
Software:

- Seamless Wi-Fi sync of pictures/videos
- Modes of operation:
    - Single picture
    - Video
    - Timelapse
    - Library preview
- Touch-sensitive UI and live preview



Plan:

The camera will be based on Raspberry Pi Zero W / Raspberry Pi 3, which will store image data on a SD card and allow synchronisation via WiFi. 4DPi-24 Hat will be used as a camera display to deliver a simple touch-sensitive UI and show live image preview. Raspberry Camera Module v2 will serve as an image sensor. The body of the camera will be designed in OpenSCAD software and produced by 3D printing. UI will be programmed using Python and Qt5 library. Synchronisation of files will be achieved through owncloud / Dropbox service.



3, which will store image data on a SD card and allow synchronisation via WiFi. 4DPi-24 Hat will be used as a camera display to deliver a simple touch-sensitive UI and show live image preview. Raspberry Camera Module v2 will serve as an image sensor. The body of the camera will be designed in OpenSCAD software and produced by 3D printing. UI will be programmed using Python and Qt5 library. Synchronisation of files will be achieved through owncloud / Dropbox service.

Outcomes:

The final product should meet the design specifications. Sci-Fi camera will be made using off the shelf components, would require minimal time, tools and experience during assembly. Designs and software files will be available under MIT license.

Budget

For one camera:

RPi :	*25.00*	*RS: 896-8660*
PiCam :	*20.00*	*RS: 913-2664*
4DPi24-Hat :	*22.00*	*OneCall: 2456984*