

Remote multi-camera control

Contributor: Emil Terman (NMS)

Supervisor: Maximilien Brice (IR-ECO)

Project: [github](#) (linux only)

Problems:

- The available software is either unreliable or hard to automate. They often offer only a graphical interface, making automation a nightmare
- Often the computer is unplugged or a camera just silently stops working
- Every week we have to manually transfer the files to the NFS server, which takes hours and may silently fail midway
- The time-lapses can be bigger than a year, so it requires a lot of manual work

Objective:

- Get live preview of the connected cameras
- Take pictures and download
- Manage the camera's settings
- Create time-lapses
- Automatically send the time-lapse pictures to an NFS server
- Logging and Email notifications

Final result:

I created a web application written in python, which uses libgphoto2 as the main library to control the cameras. I have also written bash scripts for easier setup and run, as well as scripts for automatic run at boot, so that if the power is cut off from the computer, it will automatically resume the time-lapse and file transfer. In addition to this, the application sends email notifications whenever an error occurs, so that the user will be immediately informed. Because it is a web app, multiple people can control the cameras at the same time using only a browser from computers or phones.

Advantages:

- No need to use Remote Desktop or similar software to control the cameras
- The app is accessible from a browser
- The photos are transferred as soon as they are taken
- The file transfer buffers the photos, so it doesn't block the time-lapse in case of a weak network

Disadvantages:

Doesn't offer as many control options as an official camera controlling app like NikonControlPro2. But, using KVM (a free Virtual Machine tool) which allows USB passthrough, it's possible to install windows. The KVM is then accessible through ssh.

Conclusion:

There are many people at CERN struggling with similar problems. Hopefully this application will be of use to them.