A ”Moon Guider” for ground-based telescopes

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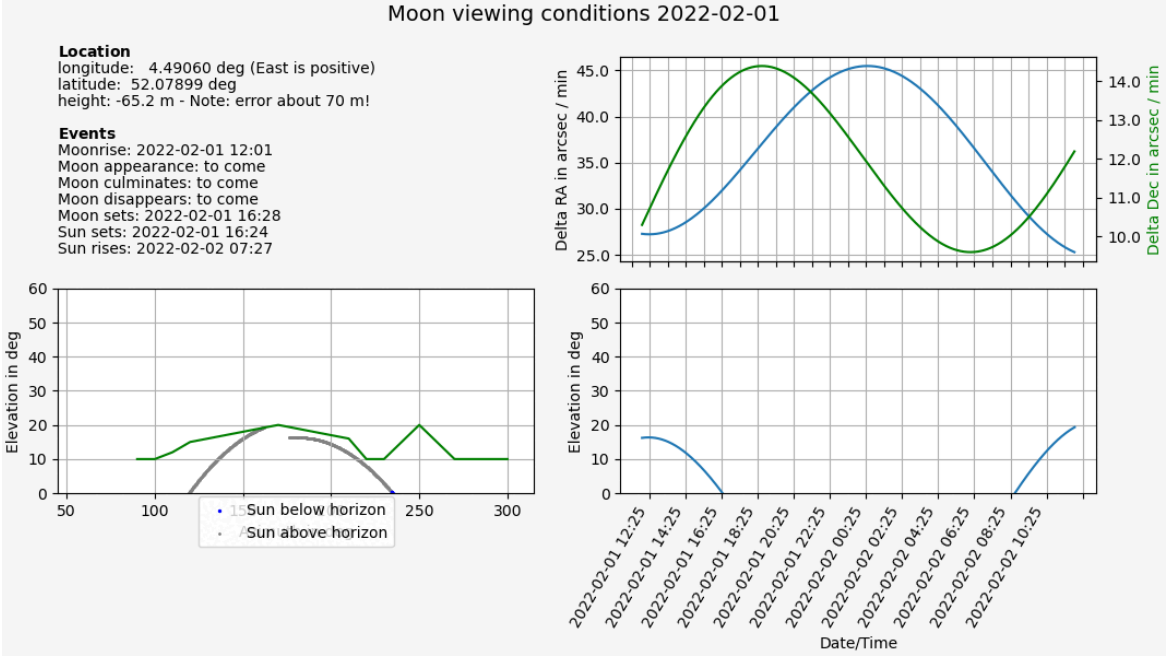
The Moon moves ☹

- Orbiting the Earth on an ellipse
- Parallax effect depending on where on Earth you are



Normal telescope mounts track the stars

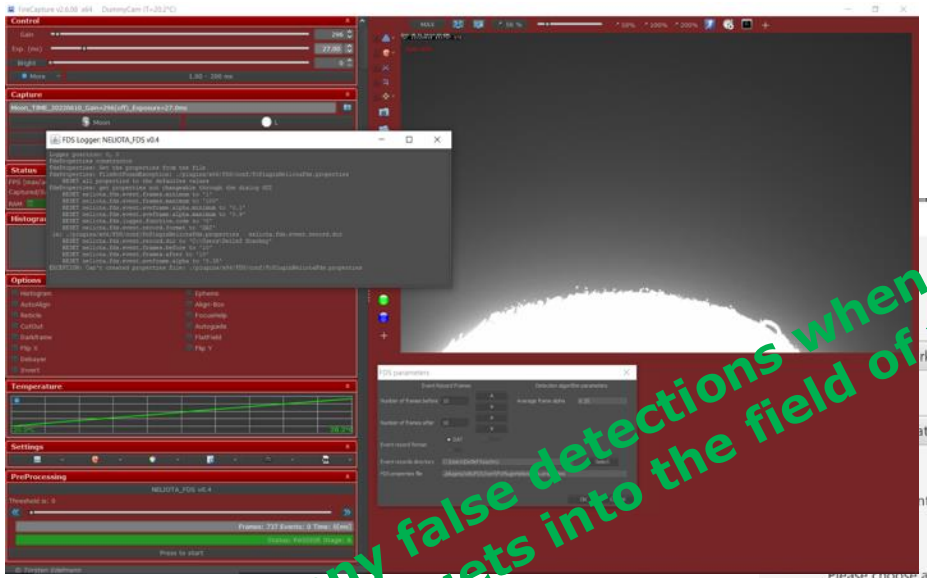
Flash Detection Software

The Flash Detection Software (FDS) is a tool for detecting impact flashes on the Moon. This software can be used by any amateur or professional astronomer performing planetary observations with video cameras or fast-frame CMOS/CCDs for data processing and flagging all potential flash events. The ultimate goal is to encourage and increase the observations of impact flashes from both professional and amateur astronomers and to enable verification of impact flashes from multiple sites. The software was developed and tested for lunar impact flash observations, however, its use on planets (e.g. Jupiter, Mars) is encouraged.

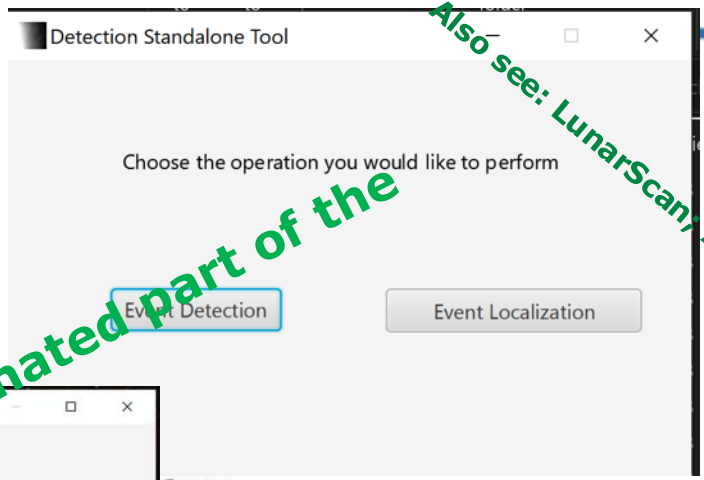
https://kryoneri.astro.noa.gr/en/flash-detection-software/

Flash Detection Software

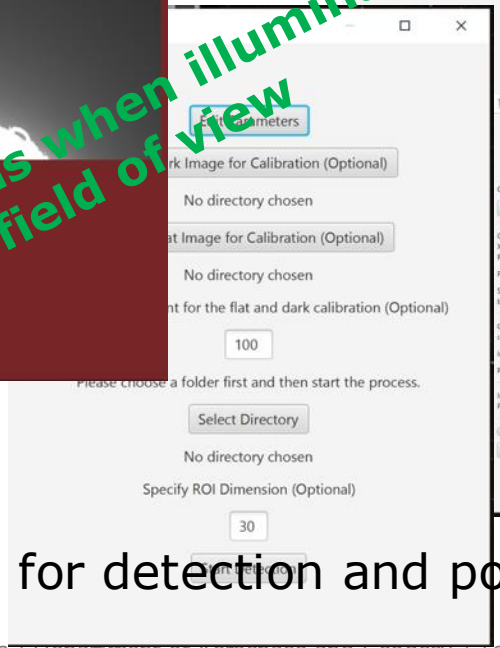
”Real-time” quick and dirty detection

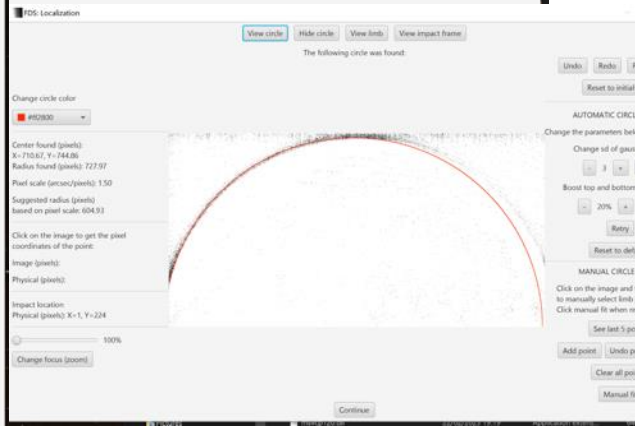


Many false detections when illuminated part of the Moon gets into the field of view



Also see: LunarScan, ALFI

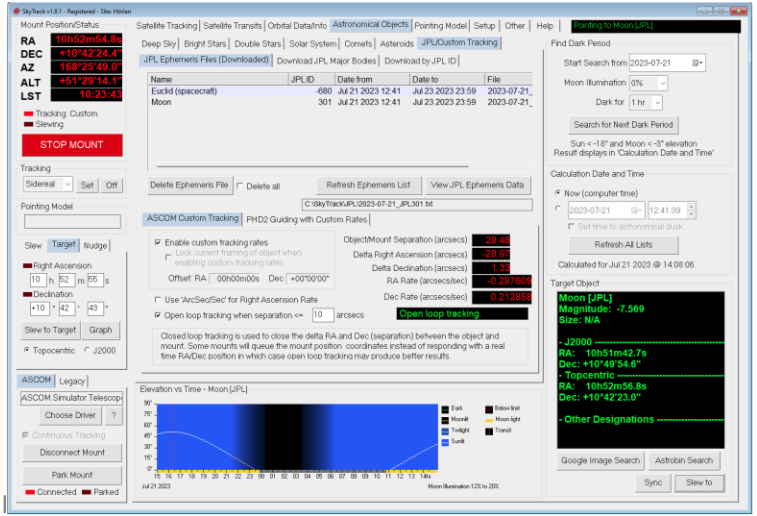




”Stand-alone” tool for detection and position determination

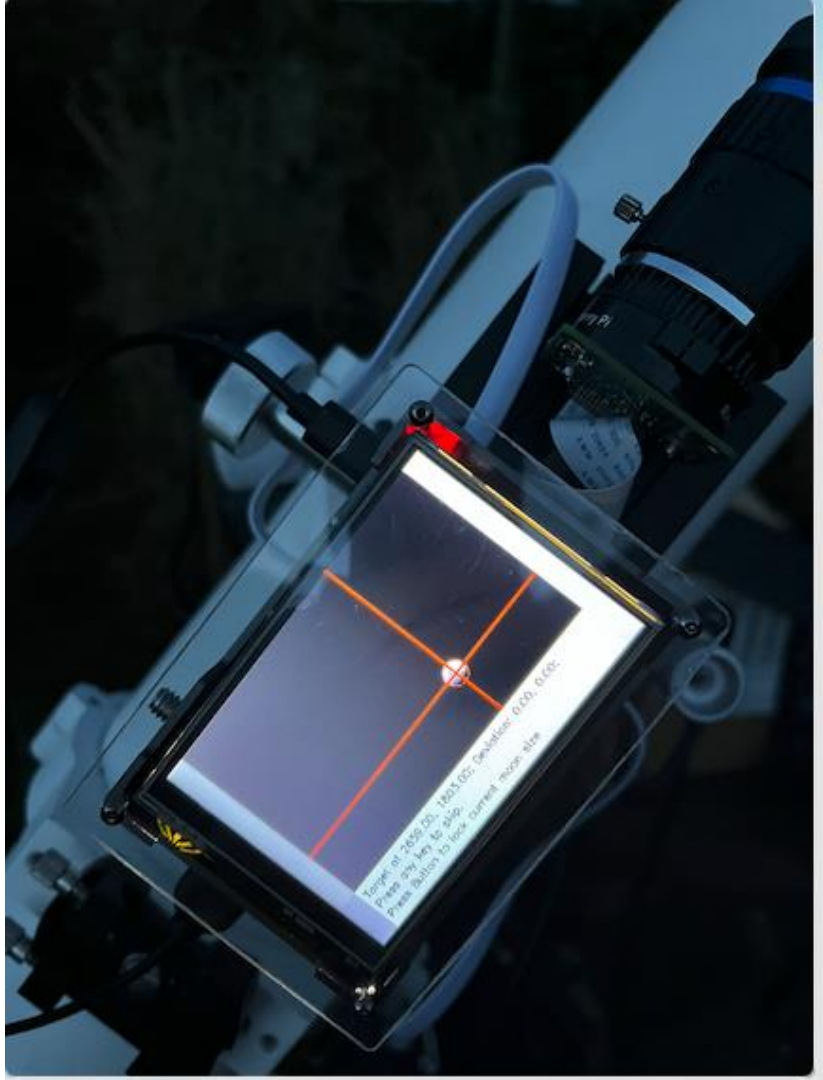
Tracking versus guiding

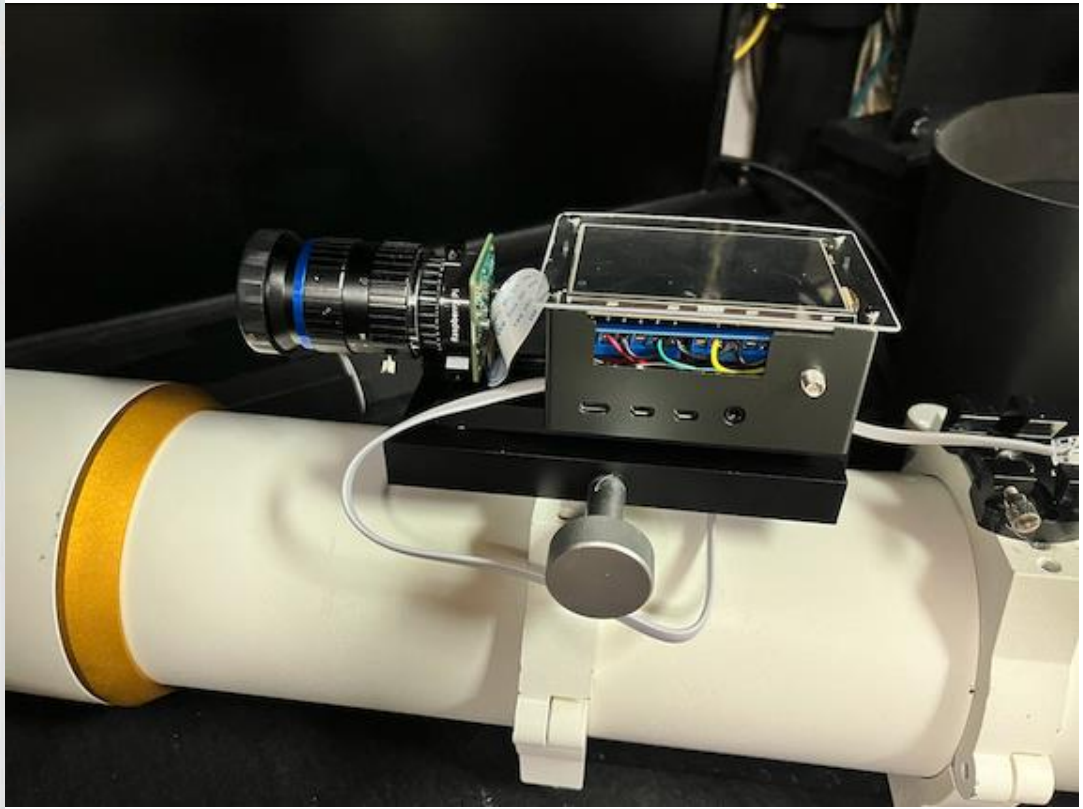
- **Tracking = The mount is commanded to follow the expected position of an object**
- **Guiding = Closed-loop control system to follow the object**



E.g. N.I.N.A., SkyTrack

The “Moon Guider”


Target at 2656.00, 1813.00; Deviation 0.00, 0.00;
Press any key to stop.
Press Button to save current moon size



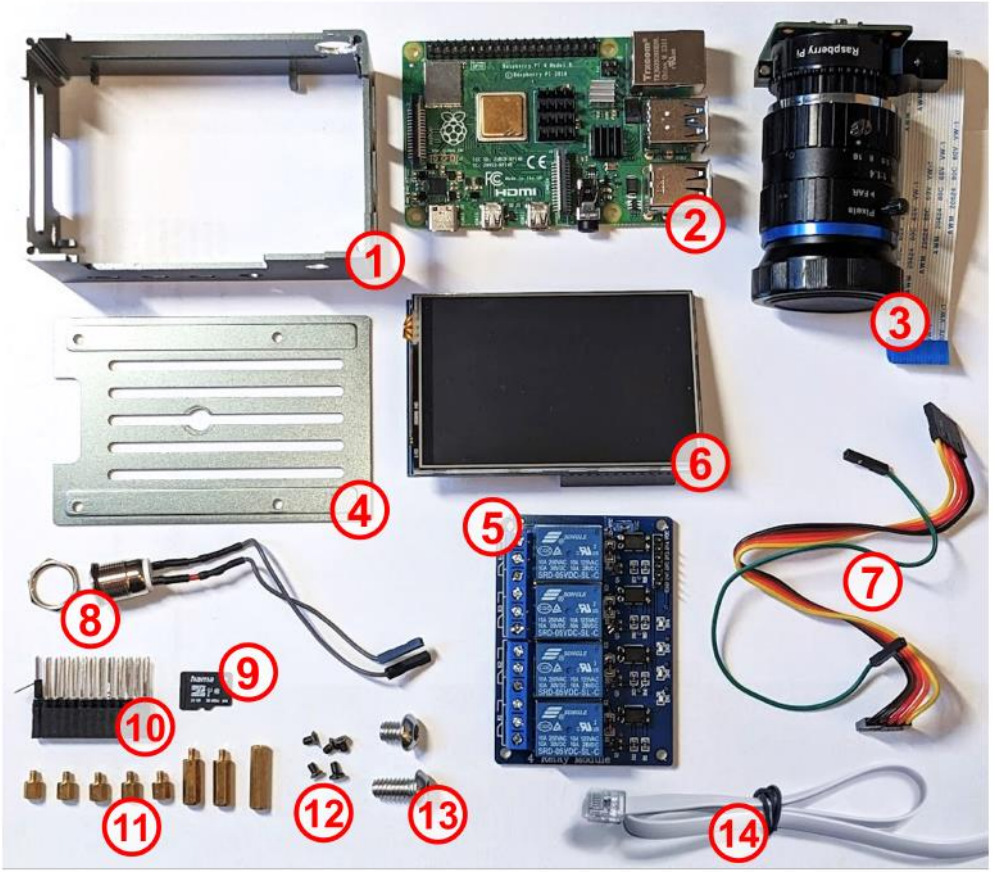


Fig. 2–8: Top view of all the essential parts of the Moon guider system laid out and numbered.

First results

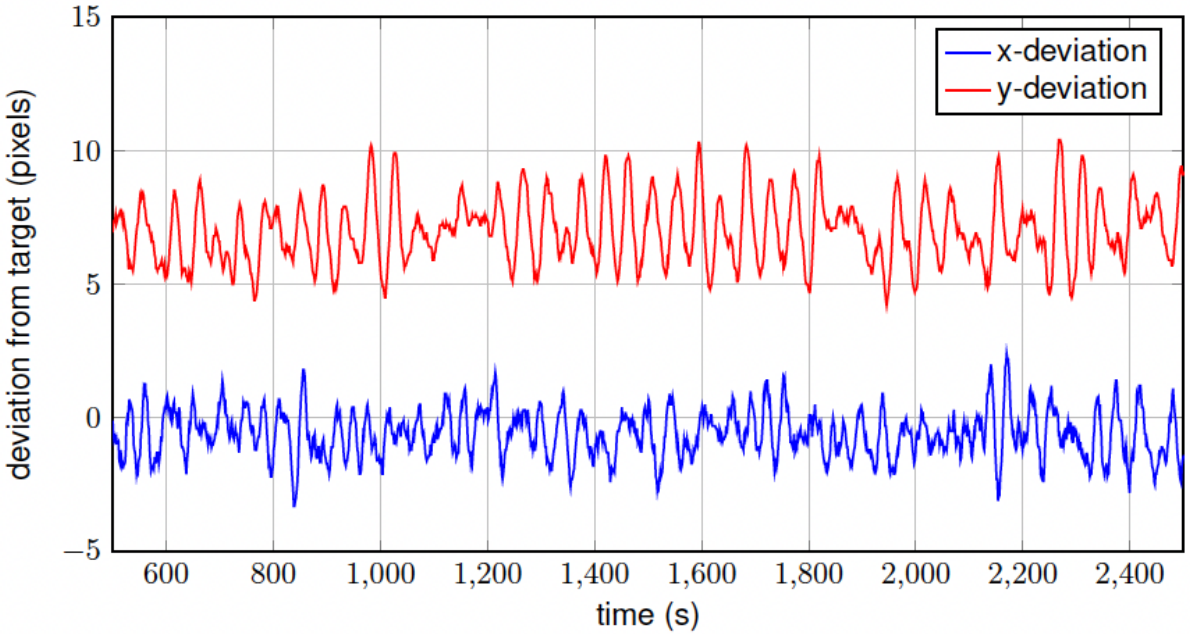
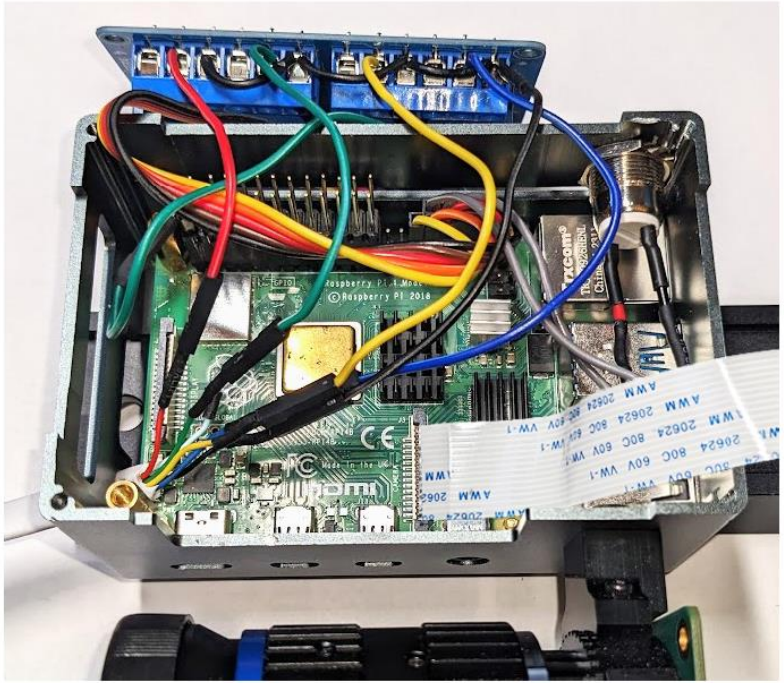


Fig. 5–2: Extract of a plot of a 50 minute test during half Moon in a clear night.

Still to do

- Add a ‘calibration’ method to determine speeds and directions
- Improve control method
- Put in better housing



More info:

https://www.asg.ed.tum.de/en/lpe/research/near-earth-objects-and-impacts/lunar-impact-flashes/

https://www.asg.ed.tum.de/fileadmin/w00cip/lpe/_my_direct_uploads/Semesterarbeit_Moon_Guider_Tobias_Kurz.pdf

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