Project DVTI Camera

A digital camera with GPS time inserter built by IOTA members

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Stellar Occultation Timing
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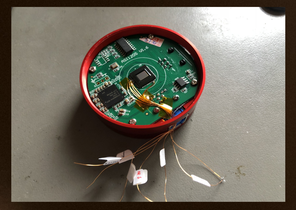
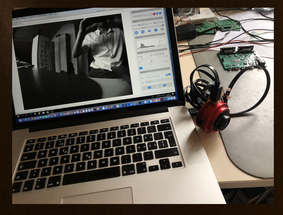
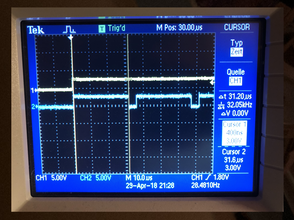
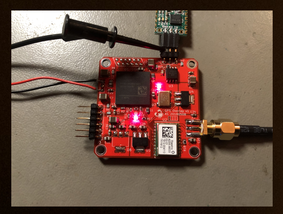
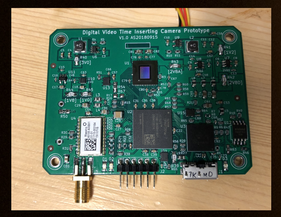
Milestones of the Project

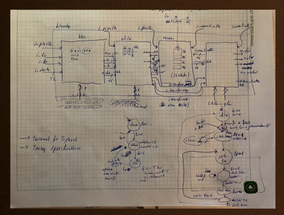


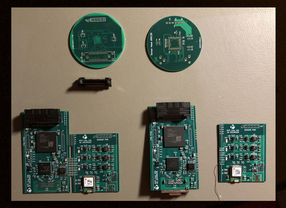


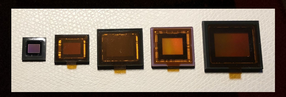












1. Proof-of-Concept:
- No own image sensor (ASI 120MM)
- No GPS-modul
- Small FPGA board with a Xilinx Virtex II FPGA, insertion of a static text into the two highest bits of the ASI 120MM.

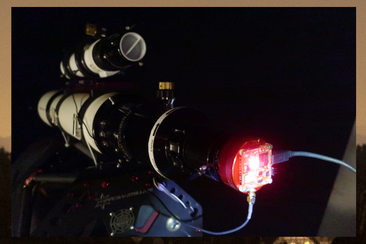
2. Prototype ASI with additional board:
- No own image sensor (ASI 120MM)
- GPS-modul Maestro A2200-A: SiRFStarIV, GPS, no Buffering, external antenna
- Xilinx Spartan 7 FPGA

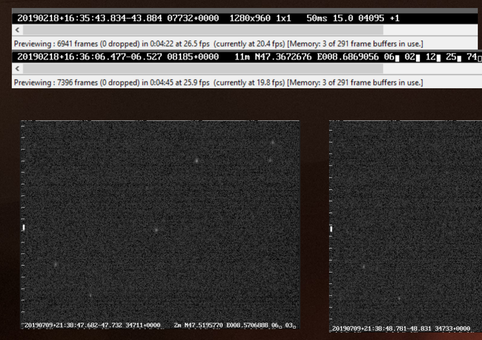
3. Prototype Camera V1:
- rectangular shape
- Sensor AR0130CSSM, QE ca. 80%, resolution 1280x960, max. 45 fps
- GPS-modul Maestro A5100-A: SiRFStarV, GPS +GLONASS, Supercap-Backup up to 4h, external antenna
- USB3-Interface (micro-b)
- Xilinx Spartan 7 FPGA

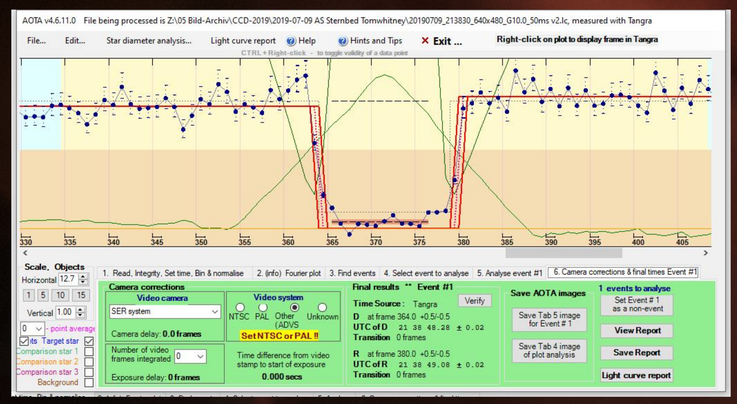
4. Prototype Camera V2:
- round shape (2" diameter)
- Sensor AR0130CSSM, with option to use alternative sensors (used as plugin-modules). Next step: IMX174
- GPS-modul uBlox CAM-M8C: GPS, GLONASS, Galileo, BeiDou (max. 3 at the same time), no backup, internal + external antenna
- USB3-Interface (rugged USB-C)
- Xilinx Artix 7 FPGA

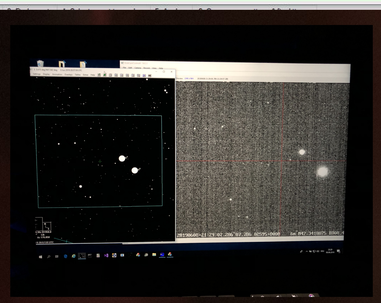
5. Prototype Camera V3 (planned):
- Sensors AR0130CSSM (?), IMX174, IMX428 (?); multiple sensors as plugin-modules
- GPS-Modul uBlox CAM-M8C: GPS, GLONASS, Galileo, BeiDou (max. 3 at the same time), internal + external antenna
- USB3-interface (rugged USB-C or typ B?)
- Xilinx Artix 7 FPGA
- Onboard RAM Buffer for 1 frame

In Operation

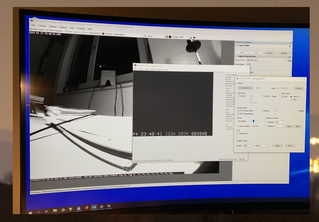


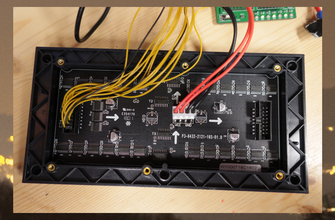


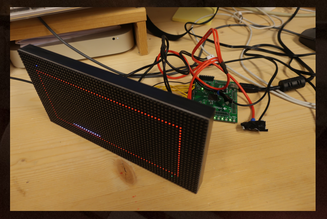


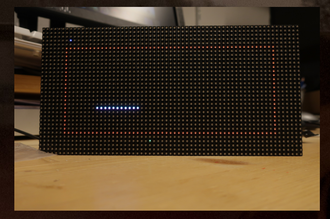


Testings









Project overview

The goal of the DVTI project is to develop a digital video camera targeted mainly at observing star occultations, with the following attributes:

- precise GPS timestamp from internal GPS receiver module with no delay (integration of the timestamp within the camera into the digital data stream)
- highly sensitive monochrome image sensor
- continuous improvement of hard- and software through feedback from the community
- price as low as possible

The development team consists of Andreas Schweizer and Stefan Meister. To reach the goal of a low price, we plan to initiate a **Kickstarter campain later in 2019** so that components can be manufactured and bought at reasonable prices. In addition, as we develop the camera in our spare time, the time for R&D won't add to the camera price.

The project website including a wiki, discussion board, "To Do" list for new features, news, firmware updates ect. is available at

https://groups.io/g/d-vti-cam/