

Trigger proposal

Igor Pains

Rafael Nóbrega and Giovanni Mazzitelli

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Analysis & reconstruction meeting

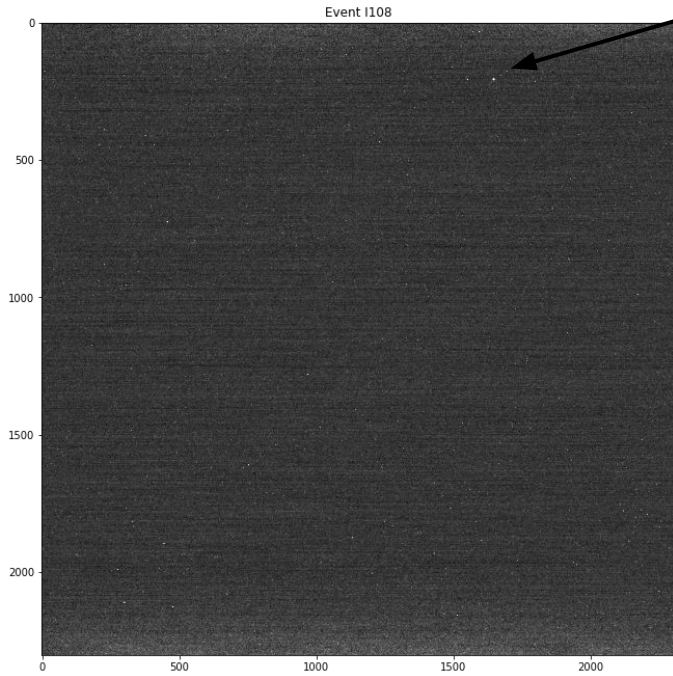
1.

Proposal

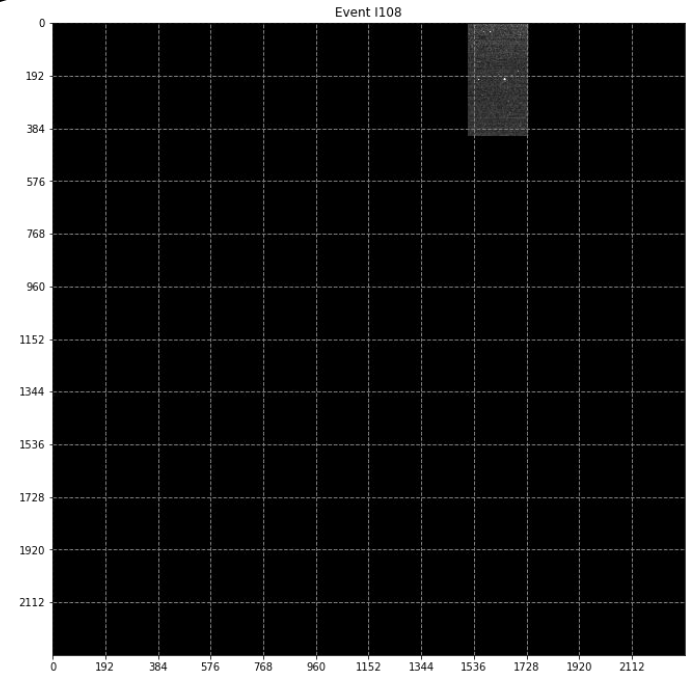
Proposal

- ▷ Develop two algorithms to be tested as online trigger to decide whether to save or not images taken by the detector
 - **Simple algorithm based on subimage metrics: mean, std**
 - We are starting from the simplest possible case to then:
 - gradually increase complexity following up the performance evolution (efficiency, false alarm and response time) and
 - optimize computing processing issues
 - **Convolutional Neural Network**
 - on training stage (not tested yet)

Trigger online



Signal



Example of the online trigger algorithm used on a LNF run taken on 15/12/2022.


2.

Planning and status

Plans & to do

1. Dataset selection

- a. Pedestal runs
- b. Signal simulation runs



Gran Sasso data

2. Algorithms (on going)

- a. Baseline algorithm (subimage metrics) - Speed improvement using GPU/multicore processing.
- b. CNN based algorithm - Training.
- c. Reconstruction algorithm.

3. Results

- a. Efficiency performance comparison.
- b. Time performance comparison.

Algorithms

▷ **Framework strategy:**

- Google Colab (on going)
- DAQ machine (with GPU enabled)

▷ **Baseline algorithm:**

- The algorithm needed to be rewritten using tensors in order to use the GPU. ✓
- Small syntax modifications are being done to implement the multiprocessing. ↻
- Time comparison will be done using four versions: Regular version, multiprocessing version, tensorflow versions using CPU and GPU.

▷ **Reconstruction algorithm:**

- Full reconstruction algorithm will be used for comparison.

Thanks