PREPARATION OF DATASET FOR CNN

Machine Learning Meeting

May 10, 2019

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GPS time

Use the previous day's folder such as **"/frame0/full/12411"**, and this folder have about 27.8 hour frame data

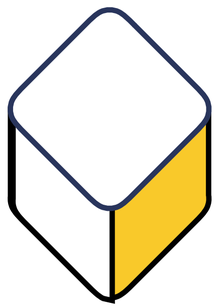
Primary Channel : K1:PSL-PMC_MIXER_MON_OUT_DQ

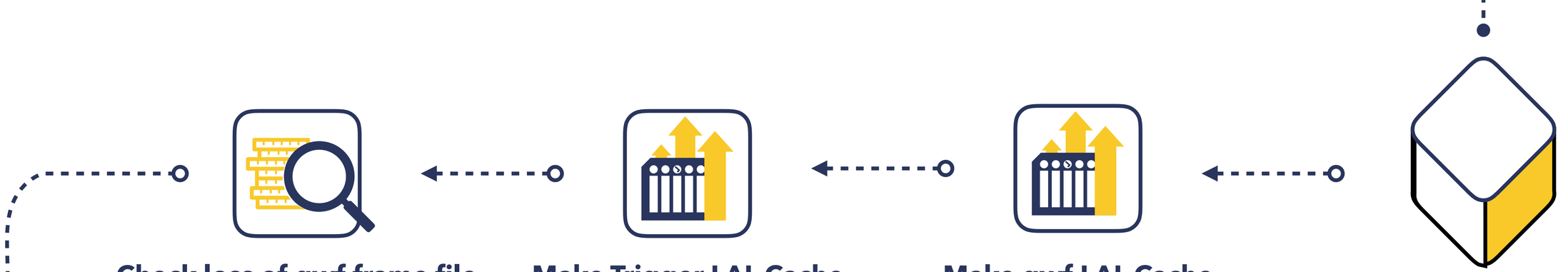
Auxiliary Channels :

K1:IMC-CAV_ERR_OUT_DQ	K1:PSL-PMC_SLOW_MON_OUT_DQ	K1:PEM-ACC_PSL_PERI_PSL2_X_OUT_DQ
K1:IMC-CAV_REFL_OUT_DQ	K1:PSL-PMC_TEMP_OUT_DQ	K1:PEM-ACC_PSL_TABLE_PSL1_Z_OUT_DQ
K1:IMC-CAV_TRANS_OUT_DQ	K1:PSL-PMC_TRANS_DC_OUT_DQ	K1:PEM-ACC_PSL_TABLE_PSL2_Z_OUT_DQ
K1:IMC-MCL_SERVO_OUT_DQ	K1:PEM-ACC_MCF_TABLE_REFL_Z_OUT_DQ	K1:PEM-ACC_PSL_TABLE_PSL3_Z_OUT_DQ
K1:PSL-PMC_FAST_MON_OUT_DQ	K1:PEM-ACC_PSL_PERI_PSL1_Y_OUT_DQ	K1:PEM-MIC_PSL_TABLE_PSL4_Z_OUT_DQ

h-veto configuration

snr-thresholds = 6.50, 6.75, 7.00, 7.25 ,7.50, 7.75, 8.00, 8.50, 9.00, 10.00, 11.00, 12.00, 15.00, 20.00, 40.00, 100.00, 300.00
time-windows = 0.01, 0.02, 0.05, 0.10, 0.20, 0.40, 0.80, 1.00, 4.00, 8.00, 10.00, 12.00, 16.00
minimum-significance = 4.0
primary snr-threshold = 4





HOW LONG DOES IT TAKE IN THIS STEP? | **about 26 min**

K1 HierarchicalVeto

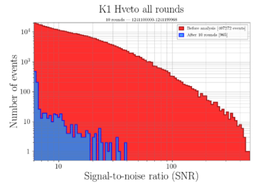
1241100000-1241199968

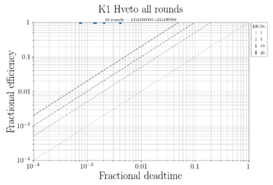
DETAILED VIEW http://10.68.10.130/~hveto/hveto-PMC

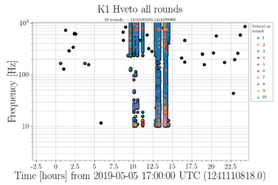
Summary

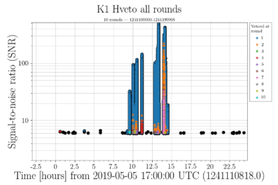
Summary of this HierarchichalVeto analysis.

Round	Winner	Twin [s]	SNR Thresh	Significance	Use [%]	Efficiency [%]	Deadtime [%]	Cum. efficiency [%]	Cum. deadtime [%]
1	K1:PSL-PMC_SLOW_MON_OUT_DQ	0.01	6.50	96765.68	99.91 [368657/368982]	99.32 [404507/407272]	0.07 [72.92/99842.00]	99.32 [404507/407272]	0.07 [72.92/99842.00]
2	K1:PSL-PMC_FAST_MON_OUT_DQ	0.01	6.50	1225.48	95.17 [709/745]	39.82 [1101/2765]	0.00 [1.43/99769.08]	99.59 [405608/407272]	0.07 [74.35/99842.00]
3	K1:PEM-MIC_PSL_TABLE_PSL4_Z_OUT_DQ	0.01	6.50	138.57	27.36 [502/1835]	5.23 [87/1664]	0.00 [0.48/99766.91]	99.61 [405695/407272]	0.07 [74.83/99842.00]
4	K1:PEM-ACC_PSL_TABLE_PSL3_Z_OUT_DQ	0.01	6.50	71.07	3.70 [1175/31732]	6.02 [95/1577]	0.06 [59.50/99764.97]	99.64 [405790/407272]	0.13 [134.34/99842.00]
5	K1:IMC-MCL_SERVO_OUT_DQ	0.01	300.00	59.76	12.70 [2445/19251]	4.45 [66/1482]	0.01 [6.96/99705.56]	99.65 [405856/407272]	0.14 [141.29/99842.00]
6	K1:IMC-CAV_ERR_OUT_DQ	0.01	10.00	63.90	4.15 [13115/315824]	18.29 [259/1416]	0.06 [63.00/99698.86]	99.72 [406115/407272]	0.20 [204.30/99842.00]
7	K1:IMC-CAV_ERR_OUT_DQ	0.01	6.50	54.60	0.84 [591/69971]	13.83 [160/1157]	0.20 [203.00/99636.68]	99.76 [406275/407272]	0.41 [407.30/99842.00]
8	K1:PEM-ACC_PSL_PERI_PSL1_Y_OUT_DQ	0.01	6.50	17.02	2.76 [78/2829]	1.50 [15/997]	0.00 [0.34/99436.65]	99.76 [406290/407272]	0.41 [407.63/99842.00]
9	K1:IMC-CAV_TRANS_OUT_DQ	0.01	300.00	7.39	1.79 [121/6770]	1.02 [10/982]	0.00 [0.19/99434.70]	99.76 [406300/407272]	0.41 [407.82/99842.00]
10	K1:PEM-ACC_PSL_TABLE_PSL2_Z_OUT_DQ	0.01	6.50	6.49	0.37 [16/4314]	0.72 [7/972]	0.00 [1.12/99432.63]	99.76 [406307/407272]	0.41 [408.94/99842.00]









h-veto

STEP 2

Get vetoed triggers and coherence information from h-veto

From ./triggers/K1-HVETO_VETOED_TRIGS_ROUND_*-*.txt

Find loudest triggers without duplication

time-window = 0.05s

snr-thresholds = 10

Make table

meta : time-window, snr-threshold

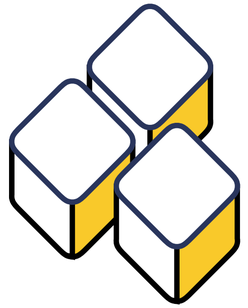
top line : round, primary_channel, aux_channel, peak_time, peak_freq, snr

Run OmegaScan

time duration : 0.1s, 0.2s, 0.5s, 1.0s, 2.0s, 4.0s

Running time 2 min ~ 6 hour

Depend on number of trigger data

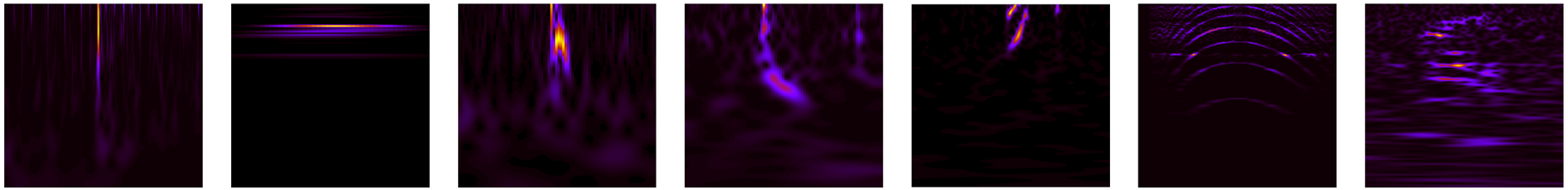


STEP 2

CLASSIFY

Glitch Class for K1:PSL-PMC_MIXER_MON_OUT_DQ

[>> google drive link]



blips plates "h" fish hook and so on…

MLA tool for CNN

PyTorch, TensorFlow

CLASSIFY

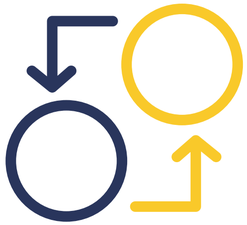
CNN

CONFIG

1 day data and15 channels

STEP 1

(26 min)



h-veto

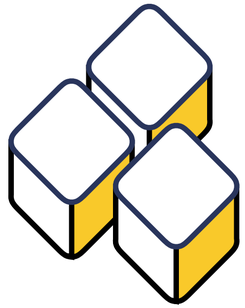
(2 min ~ 6 hour)

CNN

(To Be Start)

CLASSIFY

(Working hard…)



STEP 2

(2 min ~ 6 hour)

Number of OmegaScan plots

Ordinary : 1,000~2,000

Minimum : 20~30

Maximum : 6,000~

What flavor?

project naming...