FAST PATTERN RECOGNITION TRIGGER FOR ATMOSPHERIC CHERENKOV TELESCOPES

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The ambitions to bridge the energy gap between ground based and satellite borne detectors requires to decrease the threshold of Cherenkov telescopes down to several tenths of GeV. The images corresponding to such low energies and registered with high angular resolution will lead to disconnected patterns. The standard second-momentum analysis will not be so effective as for images detected with less angular resolution or more compact mirrors and high incident energies above 300 GeV. Therefore, the main tasks for an "intelligent" trigger are data reduction and background rejection. We propose to use the hardware neurochip SAND (Simple Applicable Neural Device) as fast "intelligent" Pattern Recognition Trigger (PRT). In addition to decrease the registered event rate down to several kHz, the PRT will reject muon and hadron backgrounds otherwise at present only possible off-line. Using a special board of hardware neural accelerators and evolutionary network training strategies we construct a PRT which meets both, timing and pattern recognition requirements.