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Testing a novel self-assembling data paradigm in the context of IACT data

Tuesday 4 August 2015 16:00 (1 hour)

The process of gathering and associating data from multiple sensors or sub-detectors due to a common physical event (the process of event-building) is used in many fields, including high-energy physics and gamma-ray astronomy. The problem of fault tolerance in event-building is a difficult one, and one that becomes increasingly difficult with higher data throughput rates and increasing numbers of sub-detectors. We draw on biological self-assembly models in the development of a novel event-building paradigm that treats each packet of data from an individual sensor or sub-detector as if it were a molecule in solution. Just as molecules are capable of forming chemical bonds, "bonds" can be defined between data packets using metadata-based discriminants. A database—which plays the role of a beaker of solution—continually selects pairs of assemblies. During this process higher-quality associations supersede spurious ones. The database thereby becomes fluid, dynamic, and self-annealing rather than static. We will describe tests of the self-assembly paradigm using our first fluid database prototype and data from the VERITAS gamma-ray observatory.

Collaboration

- not specified -

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