TDAQ Subgroup White Paper Progress Workshop

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With thanks to Stephanie Majewski, who has stepped down

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Broad Timeline for white papers

- 19 Nov 2021: White paper kickoff for IF
  - Goal to share plans on white papers/advertise contributions

- ~~14-17 Feb 2022: White paper wrap-up~~
  - ~~Part of CPAD workshop~~ [cancelled]
- New ➔ 18 Feb: Virtual Snowmass IF community workshop

- 15 March 2022: White paper final deadline
  - An executive summary will be really helpful to us
  - Late papers may be considered, at discretion of conveners (Let us know if this ends up being the case)

What happens after that

- Preliminary topical group reports: end of May 2022
- Preliminary frontier reports: end of June 2022
- Snowmass community summer study: 17-27 July 2022 @ UW-Seattle
    - This then leads into the final executive summaries and group/frontier reports, to be finished by ~Oct 2022

Recall: Paper Organization Meeting Nov.9

- Held our white paper kick-off and Snowmass reawakening meeting earlier this month: https://indico.fnal.gov/event/51566/
- Included a survey for people to to express their interest in contributing to or leading a TDAQ white paper, and in what areas
- Meeting goals:
  - Get a sense of who will be submitting TDAQ white papers
  - Facilitate common white papers on topics of broad interest
    - Allow contributions from those who may not be able to commit to a full stand-alone white paper
    - Show community-driven input on pressing needs
    - Identify (co)-editors for these efforts
- Had about 18 participants, and one presentation on an already complete white paper (Fast ML)

Proposed Common White Papers

“Artificial Intelligence and Machine Learning in Trigger and DAQ”

- Big and popular topic, so depending on community feedback consider split to two white papers? e.g. “AI/ML at the edge” and “AI/ML in High-level triggers, event-filtering, and detector control”
- Work closely with **IF07** (especially on the former) and **computing frontier** (especially on the latter)

This area already has one white paper completed, as reported by Allison Deiana:

- **Applications and Techniques for Fast Machine Learning in Science**, arXiv:2110.13041

Other Proposed Common White Papers

“Innovating Trigger and DAQ for the next generation of detectors”

- Include TDAQ architecture and infrastructure (e.g. streaming DAQ), fast computation on heterogeneous computing, fast timing, trigger-aware ASIC development (work with IF07)
- “Self-driving” triggers
- Natural place for ideas not specific to AI/ML (e.g. fast tracking triggers, fast spectral analysis), and a way to tie-in needs of future experiments

General catch-all for innovative ideas. David Miller, Catrin Bernius, Rainer Bartoldus kindly agree to coordinate and edit

“Readout technologies for future detectors”

- Include wireless readout, rad-hard links, multiplexed high-speed readout (**with IF07**)

Jinlong Zhang, Michael Begel, Jonathan Eisch kindly agree to help coordinate

Any Others?

How Can We Help?

Backup