

Agenda:

- Anselmo - highland CNN algorithm implementation and systematic approach
- Interaction Vertex Multiplicity Study: Spatial Analysis on Vertexes_ - Stefano Vergani

CNN algorithm:

FS: Starting on charge-- does it make sense to modify hit position? AC: I haven't thought about the parameters-- agree that when you vary wire number, and then it will influence that. Have the ability in the code to modify it in practice. This work's scope is at the propagation level, though.

Feedback needed--

- 1) is why do we need a window if later only the hit waveform hit used? Probably why I'm not getting the right values...

Times around the peak time is saved in pixel map. But then, when it calls tensor flow, it calls only with the waveform of the hit used-- doesn't use this window? So what is this window? Is it needed or not, then I can just save the hit candidates.

=> Leigh will check, it will use the association of the hits and the wires to run.

- 2) What are the variations on the basic quantities which we want to do?

=> Homework for group//a dedicated discussion on this, come back with our initial ideas

LW: Is it good enough to just smear the output vs. re-run tensor flow? We know CNN will vary along points in the track-- and only real difference in successive pixels is random charge. Distribution of CNN scores for some sample of tracks we could make sure, or in a specific region of the detector, which we could pull systematics from?

AC: Yes, in the end we can do that. But here we want to see the impact of basic quantity shifts. Can throw toys with that, or see final effect on events.

LW: We see largest effect in protons-- first 90 wires, can vary a lot due to SCE. Piling up pixels at beam tracks could show how that's working then?.

Reconstruction:

Start / Endpoint of beam tracks

X position end point, roughly where endpoint is, same for Y

Z there is a shift due to 40cm

Shower mis reconstruct is only failure mode

=> Jake, Francesca, is this consistent with positions you know of? An other geom checks to be done?

Daughter tracks:

LW: The relative normalization of those two plots is the sum of them are reconstructed. Or? MC true histogram is taller-- showing daughters not reconstructed correctly? SV: Red is only reco pandora.

JC: Are you separating daughter particles out based on passed a certain cNN cut? Or every daughter pf particle, and if track has it? Are these track-like? Or shower and track like?

SV: for pandora reconstruction-- everything is forced to be reconstructed as track.

LW: Last time, reconstruction efficiency of daughter is function of number of hits-- 14 hits is pretty low. We don't see the efficiency plateau until over 100 hits-- see last time. Low energy daughters. Plots like this look bad, and there's a reason for it. If he made a cut on larger hits, then it would be better. KM: Ah, I see, this is not beam yet, this is daughters. OK.

Vertex: how far apart beam endpoint and daughter start point?

Z start point is placed earlier than z endpoint

JC: Current definition-- is if the start point is earlier in z, forward going. Have we looked at the start or end closer to the beam point? Sometimes forward going track but placed behind the end of the beam track? To be more consistent, start point is closer to beam endpoint may help?

=> Consider how we want to handle the 7% mismatch of endpoint

KM: Is the resolution of 8cm right? Seems large? But is that sensible? SV: We thought, some cm, 1-2 probably makes sense, size of 2 cells. Agree, 8cm seems large.

LW: When considering FD, hoped get resolution almost to wire spacing. This is worse than I'd hoped. Tiles here pulling a lot-- some of the failures are a lot. Plot in the peak-- would hope it's a lot better.

=> Consider if this has any knock on effects (may not, any validation we can do?)

<baby>

Stefano less involved. Momentum res when can
Docdb doc

=>Later: How we want to propagate resolutions from this?