

Who Am I?

- I'm a..
 - **neutrino physicist** working on DUNE and NOvA
 - staff scientist at Fermilab in the Scientific Computing Div.
- I was trained on fixed target kaon experiments at Brookhaven and FNAL
- I've specialized in **DAQ and Trigger** system
 - One of lead designers/architects for the NOvA DAQ, Timing and Trigger systems
 - Lead the DAQ Group on NOvA for many years
 - Co-Lead the Data Driven Trigger Group for many years (this is the L3 or HTL system)
 - DAQ & Trigger for MIPP experiment , BNL-935, BNL-871
- I am the *Computing Architect for the DUNE* Computing Consortium
 - Prior to the start of the Consortium, I was the Computing Coordinator for DUNE
- I am the lead for the **HEPCloud** Project at FNAL



Vision

- I believe strongly that *computing is a tool that enables science*
- I believe we should **drive our technology work based on our science** needs
 - I do not believe in shoehorning our science into ill fitting technology
 - But I tend to be very pragmatic (if it gets the job done, then that is what we do)
- I am willing to try the "impossible" if I think it will let me do science I want to do.
 - This is what drove us to develop a deadtime-less trigger and use HPC for 300k+ rank statistics calculations
- I'm **not afraid of new ideas** and **not afraid to let go of old ideas**
 - I'm a strong believer in learning your system by breaking it.
 - This is how I ran our DAQ and Trigger group and how I trained my DAQ experts (don't be afraid to break it, it just means you get to fix it!)

Direction

- Neutrino science (and liquid argon detectors in particular) is using techniques that are fundamentally new to HEP.
 - Some are novel new applications of machine learning
 - Some are computational techniques that we couldn't use the past because we lacked the computational resources.
- We should adapt our current facilities and infrastructure to meet these physics needs
- We should develop new infrastructure and facilities for directly enabling these science driver
- We should not be scared to try new things

Roadmap/Priorities

- Enable HPC specific workflows and complex workflows
 - We have application that can exploit these centers, their interconnects and storage architectures.
 - We should use them
- Heterogeneous compute and application portability
 - GPU is not a four letter word.
 - Our algorithms can exploit them (LAr Reconstruction and ML in particular)
 - We should be tooling our infrastructure to take advantage of this.
- Enable new analysis paradigms
 - High bandwidth object stores for data parallel analysis