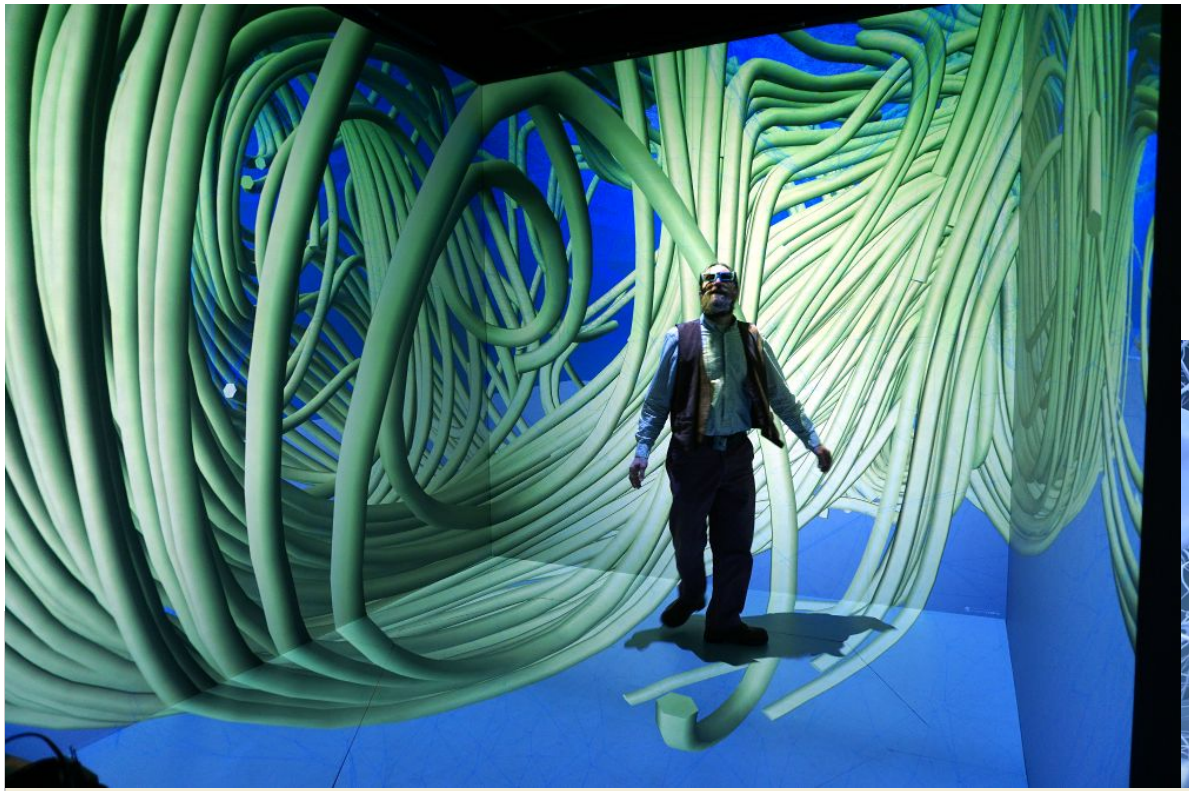

“The Human Is The Loop”:

Advances in Human-Centered AI

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INFORMATION TECHNOLOGY
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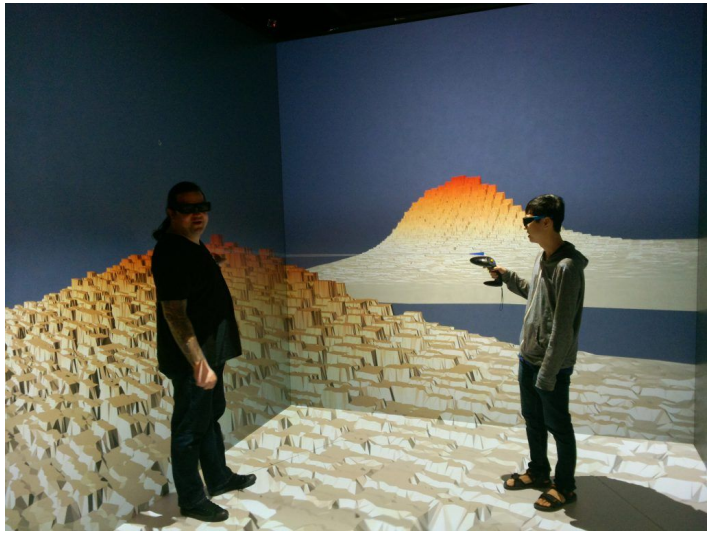
New Approaches

Center for Nuclear Femtography 19_15 :

Semantic Interaction for Particle Physics



CENTER for NUCLEAR FEMTOGRAPHY

Semantic Interaction (SI)

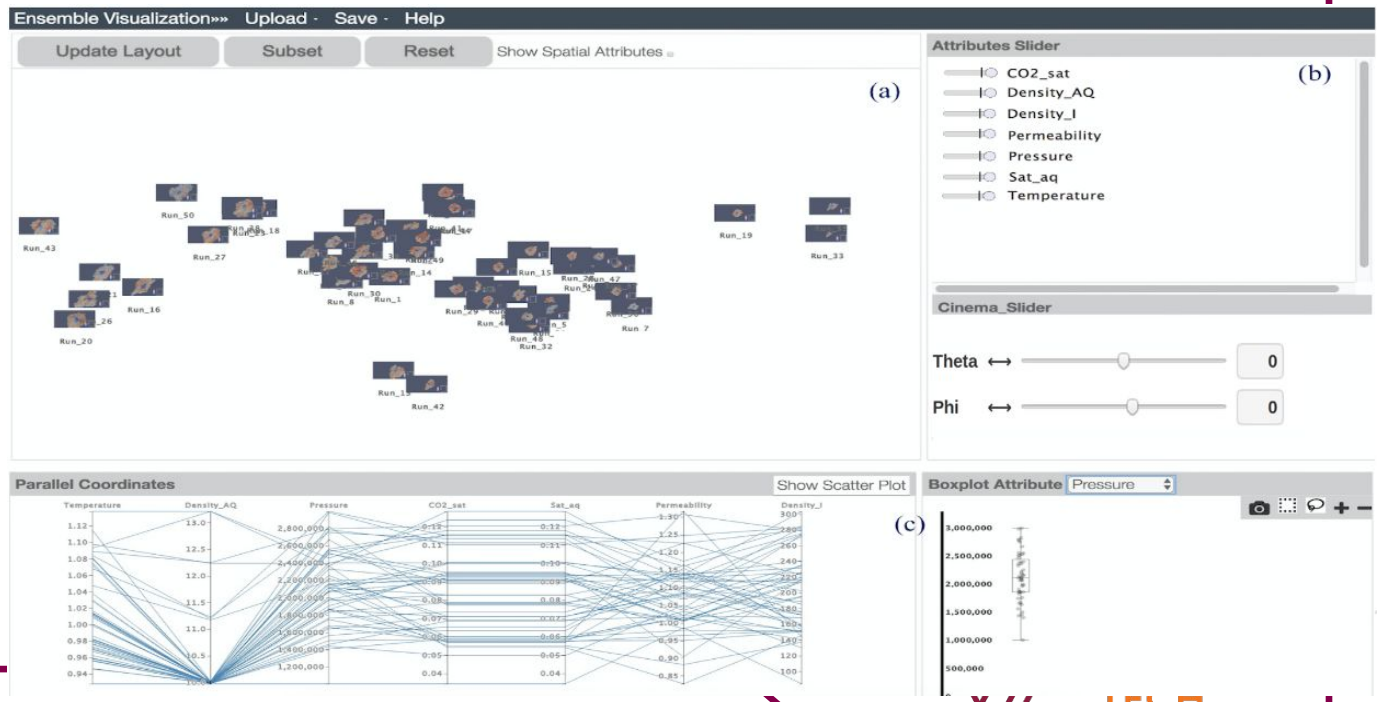
- Under-specified, high-dimensional features are difficult to query for and to define *a priori*

Key points:

- High-dimensional data is projected into an interactive low-D workspace for the *analyst*
- *Leverage the user's expertise and intuition* to guide the weighting and projection
- ***The machine learns a weighted High-D model from the user's Low-D interactions***
- Thus, SI shows and explains new features and relationships in the high-dimensional space

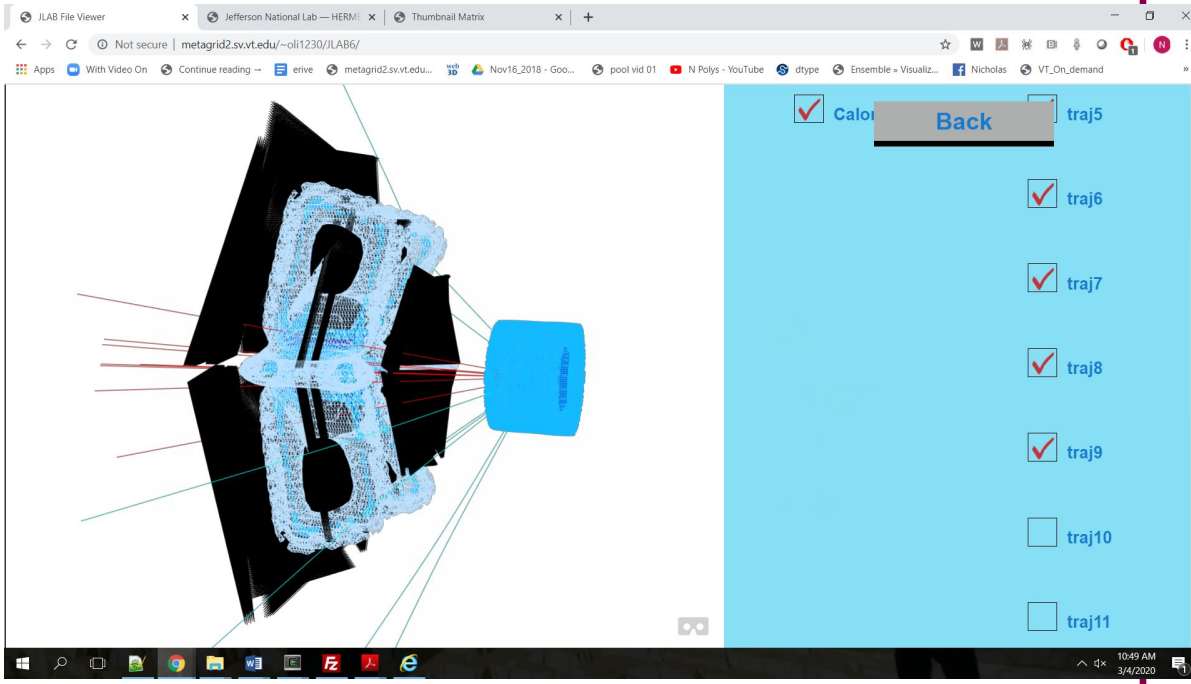
SI for High-D Observables

- Exploratory platform to find High-D relationships
- Offload the hard stuff to ML, but let the expert drive
- Manipulate CINEMA thumbnails (eg 3D projections)



Scaling with Standards

- VT Immersive Technologies:
  - Clas-12 Web3D & VR Vis via CNF 19_12
- VT HPC capabilities
  - arc.vt.edu
- X3D + W3C + WebVR/XR



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