Physics-Consistent Data-Driven Seismic Inversion with Adaptive Data Augmentation

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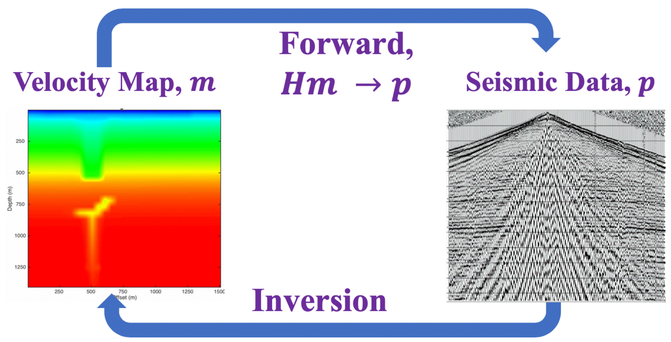
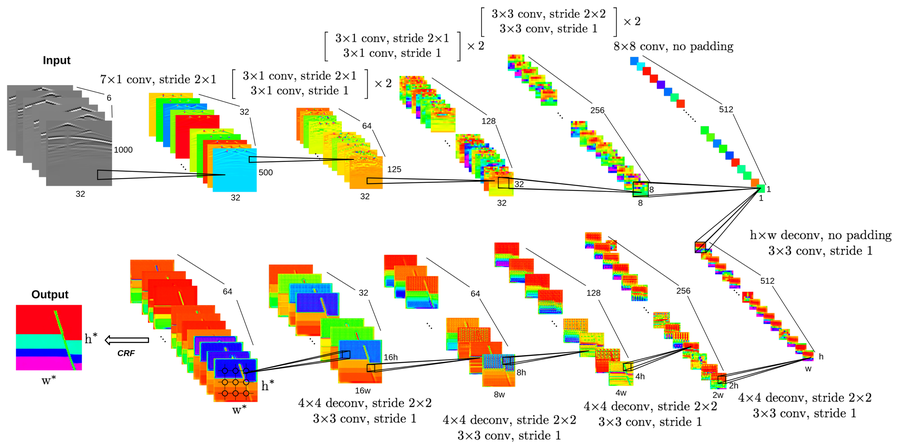
Background: Traditional Seismic Inversion

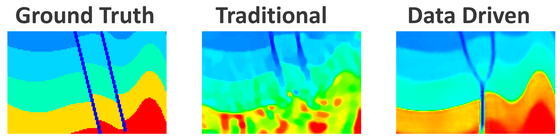


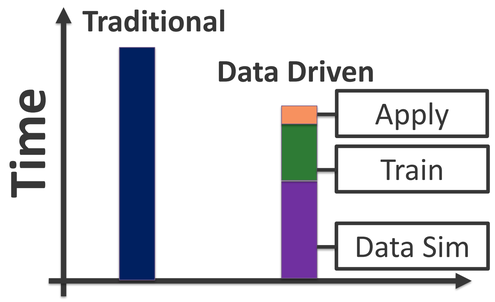
$$\min_{\mathbf{m}} \|\boldsymbol{p} - H\boldsymbol{m}\|_2^2 + \lambda R(\boldsymbol{m})$$

InversionNet: Data-Driven Seismic Inversion



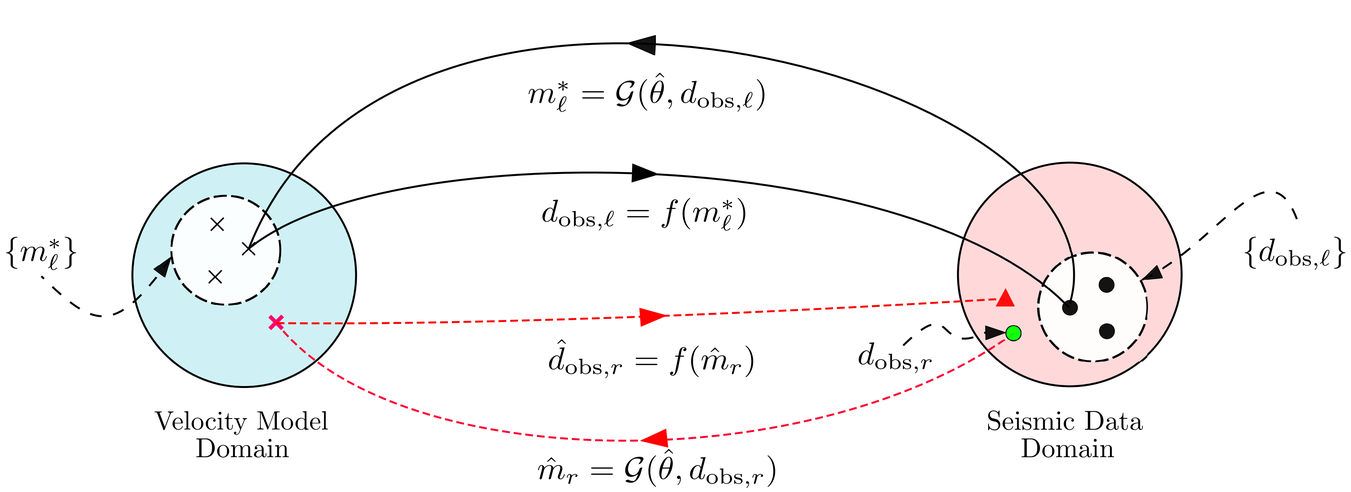
Preliminary Results



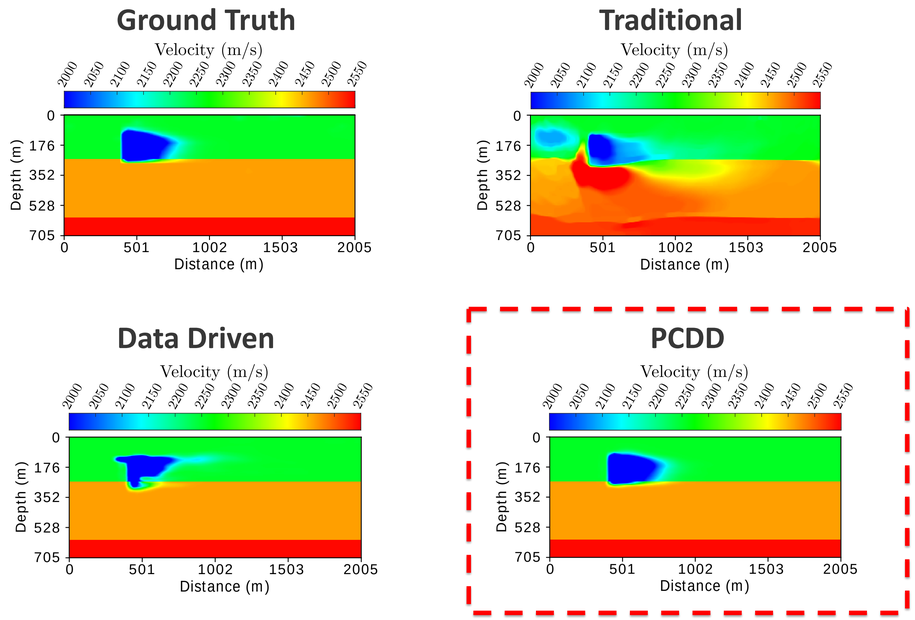


[InversionNet]: Y. Wu and Y. Lin, "InversionNet: A Real-Time and Accurate Full Waveform Inversion with CNNs and continuous CRFs," IEEE Transactions on Computational Imaging, 6(1):419-433, 2019.

Physics-Consistent Data-Driven Seismic Inversion



Numerical Results



[PCDD Inversion]: R. Gómez, et al., "Physics-Consistent Data-driven Waveform Inversion with Adaptive Data Augmentation," IEEE Geoscience and Remote Sensing Letter, 2020 (Accepted).

- **Acknowledgement:** **This work was supported by the Center for Space and Earth Science at Los Alamos National Laboratory (LANL) and by the Laboratory Directed Research and Development program of LANL.**