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Leveraging Powerful Artificial Intelligence Abstractions of IMS Data

Artificial Intelligence (AI) has developed at a rapid pace in recent years and has found widespread usage in many applications and services that we use in our daily lives. One emergent domain in Artificial Intelligence is generative modeling i.e. the process of learning statistical abstractions of observed phenomena. These abstractions are powerful not only in allowing AI systems to generate near-realistic examples of the observed phenomena (e.g. generating highly realistic pictures of human faces) but also in allowing researchers to learn rich statistical representations of the phenomena that can serve as the basis of further analysis and interpretation of said phenomena. This presentation will provide a review of generative modeling techniques and discuss how they can be applied to the gigabytes worth of seismic, hydroacoustic, infrasound and radionuclide data that the International Monitoring Systems captures each day. Specifically, this presentation will demonstrate how generative modeling can learn statistical abstractions of the data and how these abstractions can be leveraged to augment the CTBT's verification capabilities and to support spin-off analyses (e.g. monitoring climate change) of the data.

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