

Abstract Submitted
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Cosmological analysis pipelines through Neural Networks NESAR RAMACHANDRA, The University of Kansas — Potential avenues of deep learning applications for astrophysical analyses are currently being investigated. Majority of these frameworks are geared towards astronomical image studies, in anticipation of large amount of observational data from future sky surveys. The role of Neural Networks, however, may have wider impact on our understanding of our Universe. Some of these applications include emulators of cosmological functions, astrophysical parameter inference models and uncertainty quantification. We present application of one such neural network architecture, a Variational Autoencoder (VAE) in dimensionality reduction of cosmological data. We illustrate that a nonlinear encoding of information from VAE coupled with Gaussian Processes can be used for fast and accurate emulation of cosmic microwave background power spectrum.

Nesar Ramachandra
The University of Kansas

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