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Generative Adversarial Neural Networks for Disentangling stellar atmospheric parameters in Gaia RVS

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Abstract

We present an encoder-decoder architecture with adversarial training, a modification of the traditional autoencoder, whose aim is to unravel in the latent space the desired parameters of the rest of the information contained in astronomical spectra. Concretely, we have developed an algorithm for the chemical disentanglement in APOGEE and Gaia/RVS spectroscopic surveys. In this poster, we show the results obtained for deriving stellar parameters T_{eff}, log$g$, [M/H] and [α/Fe] using Gaia/RVS spectra.

GANDALF is the framework built to automate the disentangling architecture described above. It comprises several Python classes designed for data generation, a command-line tool for model definition, training, and testing, and a web application. GANDALF is accessible to the community as an open-source tool hosted on GitHub: `https://github.com/raul-santovena/gandalf`

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My poster in zenodo.org can be found here