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## The inversion of spectropolarimetric data and machine learning: a story about old friends and their adventures

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Over the past few decades, advancements in solar instrumentation, both ground- and space-based, have resulted in a large amount of high-quality spectral and spectro-polarimetric data. It is of great importance for the solar community to reliably extract the physical information encoded in these observations. The inversion of this type of data has been established as the most precise method to achieve this aim. I will examine the fundamental concepts and difficulties associated with this technique and highlight the endeavors to integrate it into the domain of machine and deep learning.

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