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【134】Mapping out phase diagrams with generative classifiers

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One of the central tasks in condensed matter physics is the characterization of phase diagrams. Traditionally, this is done by a physicist who identifies a small set of characteristic quantities, like response functions or order parameters, guided by his human intuition. This process can be automated by casting the problem of mapping out a phase diagram as a classification task. We show that such classification tasks are naturally suitable to be solved using generative classifiers. This constitutes an alternative approach compared to discriminative classifiers and benefits from generative modeling concepts native to the realm of statistical and quantum physics, as well as recent advances in machine learning.

Theoretical Work

Theory

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