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Abstract for an Invited Paper
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Soft modes in the perceptron model for jamming.[1]

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I will show how a well known neural network model the perceptron provides a simple solvable model of glassy behavior and jamming. The glassy minima of the energy function of this model can be studied in full analytic detail. This allows the identification of two kind of soft modes the first ones associated to the existence a marginal glass phase and a hierarchical structure of the energy landscape, the second ones associated to isostaticity and marginality of jamming. These results highlight the universality of the spectrum of normal modes in disordered systems, and open the way toward a detailed analytical understanding of the vibrational spectrum of low-temperature glasses.

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