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Graph representation learning in hyperbolic space

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Recently, there has been a rising surge of momentum for deep representation learning in hyperbolic spaces due to their high capacity of modeling data with hierarchical structure. We refer to the task as embeddings in hyperbolic space. Such a hyperbolic architecture can potentially lead to drastically more compact models with much more physical interpretability and better performance than its counterpart in the Euclidean space. In this seminar, I'm going to review some representative papers about graph representation learning in hyperbolic space. Contents includes a brief review of non-Euclidean geometry, the connection of graphs and hyperbolic geometry, graph embedding in hyperbolic space, and neural networks in hyperbolic space.