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The world in a grain of sand

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We propose a novel approach toward the vacuum degeneracy problem of the string landscape, using few-shot machine-learning, and by finding an efficient measure of similarity amongst compactification scenarios. Using a class of some one million Calabi-Yau manifolds as concrete examples, the paradigm of few-shot machine-learning and Siamese Neural Networks represents them as points in \mathbb{R}^3 . Using these methods, we can compress the search space for exceedingly rare manifolds to within one percent of the original data by training on only a few hundred data points. We also demonstrate how these methods may be applied to characterize ‘typicality’ for vacuum representatives. Joint work with Shailesh Lal and Zaid Zaz.

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