

# UM Physics Department

## Miami 2020 Physics Conference (Online)

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**Title:** Universes as Bigdata: from Geometry, to Physics, to Machine-Learning

**Abstract:**

We briefly overview how historically string theory led theoretical physics first to algebraic/differential geometry, and then to computational geometry, and now to data science. Using the Calabi-Yau landscape - accumulated by the collaboration of physicists, mathematicians and computer scientists over the last 4 decades - as a starting-point and concrete playground, we then launch to review our recent programme in machine-learning mathematical structures and address the tantalizing question of how AI helps doing mathematics, ranging from geometry, to representation theory, to combinatorics, to number theory.