

Chaos Theory Meets Number Theory & Machine Learning

Invited
Talk 9

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What if I told you that anyone who has been to high school already knows the basics of Chaos Theory, without actually knowing that it goes by this name. In this talk, we take a tour of the fascinating tryst between Chaos Theory and Number Theory culminating in an application to Machine Learning. In particular, we will begin by a definition of Chaos in 1D maps (3 conditions for Chaos in Maps), and then introduce Universal Orbits in 1D Chaotic maps (with a focus on Decimal, Binary and Gauss maps) and their number theoretic properties (Normal numbers). The connection between Universal Orbits and Normal Numbers finds a rather surprising application in a brain-inspired machine learning algorithm for data classification.
