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Title:	Exploiting chaos for applications
Authors:	Sinha, Sudeshna (/jspui/browse?type=author&value=Sinha%2C+Sudeshna)
Keywords:	chaotic dynamics controlled chaos Exploiting chaos
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Abstract:	We discuss how understanding the nature of chaotic dynamics allows us to control these systems. A controlled chaotic system can then serve as a versatile pattern generator that can be used for a range of application. Specifically, we will discuss the application of controlled chaos to the design of novel computational paradigms. Thus, we present an illustrative research arc, starting with ideas of control, based on the general understanding of chaos, moving over to applications that influence the course of building better devices. Developments in nonlinear science exploded after the advent of faster computing machines. We attempt to look at the reverse question, namely, has our understanding of chaotic systems done anything to advance technology? So we focus on recent research initiatives in the potentially important sub discipline of "applied chaos," driven by experiments verifying and "simulating" theoretical ideas. Specifically, we discuss how a chaotic system can work as a powerful pattern generator, and we go on to show how this feature can be used to design a reconfigurable dynamic computing device. We also indicate the still open challenge of taking such concepts and pushing them all the way to transfer of technology and commercialization, namely, "selling chaos." In this direction, we discuss our current efforts in developing a VLSI implementation of chaotic computing in a demonstration integrated circuit chip.
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