

Chaos and its Applications

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The concept of deterministic chaos has been greatly influencing not only science but also engineering, technology, and even arts along with substantial progress in our understanding of deterministic chaos since 1970's. In 1990, we proposed "chaos engineering" in Japan Electronic Industry Development Association where chaos engineering is defined as generic studies of theoretical and technological foundations for possible applications of deterministic chaos, fractals, and complex systems[1].

In Japan, many practical applications of chaos have been developed in various fields of engineering. Actually, studies of nonlinear dynamics have been steadily progressing in the fields of engineering in Japan over a half century, through the discovery of chaos by Yoshisuke Ueda in the Department of Electrical Engineering at Kyoto University in 1961.

In this talk, I will review our research on applications of chaotic dynamics, which include parallel distributed processing[2], nonlinear time series analysis, and even household appliances and dresses, and preview a future direction[3].

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References

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