

**The KW- IEEE Section, Systems, Man and Cybernetic Society Chapter and
The Pattern Analysis and Machine Intelligence Group (PAMI),
Electrical and Computer Engineering Department
Present**

**Professor John Oommen
School of Computer Science
Carleton University, Ottawa, Ontario**

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An Introduction to Chaotic Pattern Recognition and Blurring

Abstract

Pattern Recognition is the study of how a system can observe the environment, learn to distinguish patterns of interest from their background, and make decisions about their classification or categorization. In general, a pattern can be described with features where the dimensionality of the feature space can range from a relative few to thousands.

Our aim is to design a chaotic neural network that mimics olfactory structures that exhibit periodicity and chaotic activity during sensory recognition. In this talk we describe chaotic neural networks which recognize various input patterns by resonating sympathetically when target samples are presented.

We also consider the inverse problem: When and how does a PR system lose its recognition capabilities? We investigate the architecture of a neural network that loses its capacity to recognize patterns even though the quality of the stimulus may be perfect. We believe that this approach provides a chaotic rationale for both perception and its failure; it also presents a rationale for some well-known visual illusions.

[A joint work with Dr. Calitoiu and Dr. Nussbaum]

Biography

Dr. John Oommen was born in Coonoor, India on September 9, 1953. He obtained his B.Tech. degree from the Indian Institute of Technology, Madras, India in 1975. He obtained his M.E. from the Indian Institute of Science in Bangalore, India in 1977. He then went on for his M.S. and Ph. D. which he obtained from Purdue University, in West Lafayette, Indiana in 1979 and 1982 respectively. He joined the School of Computer Science at Carleton University in Ottawa, Canada, in the 1981-82 academic year. He is still at Carleton and holds the rank of a Full Professor. Since July 2006, he has been awarded the honorary rank of *Chancellor's Professor*, which is a lifetime award from Carleton University.

His research interests include Automata Learning, Adaptive Data Structures, Statistical and Syntactic Pattern Recognition, Stochastic Algorithms and Partitioning Algorithms. He is the author of more than 265 refereed journal and conference publications, and is a *Fellow of the IEEE* and a *Fellow of the IAPR*. Dr. Oommen is on the Editorial Board of the *IEEE Transactions on Systems, Man and Cybernetics*, and *Pattern Recognition*.

EVERYONE IS WELCOME