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Chaos and Source Coding

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Venue: Room **CD634**, Hong Kong Polytechnic University
Reception starts at 4:15pm
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Abstract

Various approaches of using a chaotic signal to represent a sequence of source symbols will be described. The signal can be the output of a continuous chaotic system or a discrete chaotic map. For the first case, small perturbations are applied to manipulate the chaotic orbit whose symbolic representation corresponds to the encoding of a message sequence. For the latter case, recent research reveals that finding the best initial condition for iterating a piecewise linear chaotic map to generate a symbolic representation corresponds to a message sequence is equivalent to arithmetic coding. This leads to the possibility of using chaotic maps for data compression. It is proven that this coding method achieves Shannon's entropy bound.

About the Speaker

Dr. Wong graduated with a BSc(EE) degree from The Chinese University of Hong Kong and a PhD degree from City University of Hong Kong. He is an Associate Professor in Department of Electronic Engineering, City University of Hong Kong. His research interests include chaos, cryptography and neural networks. Dr. Wong is one of the keynote speakers and workshop coordinators of the International Cryptology Workshop and Conference 2008. He is a Senior Member of The Institute of Electrical and Electronics Engineers (IEEE). He is also a Chartered Engineer and a Member of The Institution of Engineering and Technology (IET). Currently, he serves as the Technical Activities Coordinator in the Executive Committee of IEEE Hong Kong Section.