

# IEEE CIS/IAS SEMINAR

## “Co-Evolution, Games and Social Behaviors”

**Professor Xin Yao, *Fellow, IEEE, University of Birmingham, UK***

**Monday, October 24, 2005, 4 p.m. (Refreshments will be provided)**

**302 Computer Center Building, University of Missouri-St. Louis**

The iterated prisoner's dilemma (IPD) game has been used extensively in modelling various real-world situations. This talk is concerned with the evolutionary approach to the IPD game. Firstly, we generalise the game from the classical 2 player case to  $N$  ( $N > 2$ ) players and investigate the impact of the group size on the evolution. Secondly, we study a more realistic IPD game where more than two levels of cooperations are allowed. Surprisingly, more choices appear to discourage cooperation among players. Possible reasons for this are discussed. Lastly, we introduce reputation into the IPD game and study its impact on the evolution of cooperation. It turns out that the reputation of a player is an important factor in encouraging cooperative behaviours.

*Xin Yao obtained his PhD (1990) from USTC in Hefei, in computer science. He was a postdoctoral research fellow at the Australian National University in Canberra and CSIRO in Melbourne in 1990-92, and a lecturer, senior lecturer and associate professor at the Australian Defence Force Academy, University College, the University of New South Wales, in Canberra in 1992-99. He is a Professor of Computer Science in the University of Birmingham, UK since 1999. He is also a Distinguished Visiting Professor of the University of Science and Technology of China (USTC), P. R. China, and a visiting professor of three other universities. He is a Fellow of the IEEE, Editor-in-Chief of IEEE Transactions on Evolutionary Computation, an associate editor or an editorial board member of several other international journals. He is also the editor of the World Scientific book series on "Advances in Natural Computation". He was the winner of 2001 IEEE Donald G. Fink prize paper award and several other best paper awards. His research interests include evolutionary computation, neural network ensembles, global optimization, data mining and computational time complexity of evolutionary algorithms. He has more than 200 publications in those areas. He is currently the Director of the Centre of Excellence for Research in Computational Intelligence and Applications (CERCIA) ([www.cercia.com](http://www.cercia.com)). His research has been supported by more than GBP5m from various research councils/foundations, government organisations, industry, EU and charity organisations. (For directions to venue and more details contact: Professor Uday Chakraborty @ 314- 516 6339)*