

# Daniel D. McCracken

## Computational Sciences

### Seminar Series

Wednesday 3:00 p.m., October 27, 2004  
Black Hall, Room 152

**Razvan Andonie, Associate Professor**  
Computer Science Department  
C. W. U.

## **TURING AND THE NEURONS: The Limits of Neurocomputing**

**Abstract:** Recent results changed essentially our view concerning the generality of neural networks' models. Presently, we know that such models *i)* are more powerful than Turing machines if they have an infinite number of neurons, *ii)* are universal approximators, *iii)* can represent any logical function, *iv)* can solve efficiently instances of NP-complete problems. We discuss the computational capabilities of artificial neural networks vis-a-vis the assumptions of classical computability. We concentrate on the worst case “psychological” limits of neural computation. Meanwhile, we state some open problems and presumptions concerning the representation of logical functions and circuits by neural networks.

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For more information, please contact Dr. Kovalerchuk 963-1438