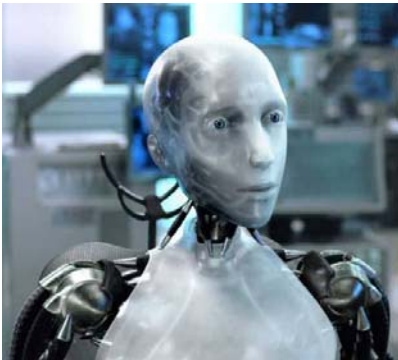


COURSE ANNOUNCEMENT
Summer 2007, Session A, June 4 to July 6

Neural Network Design

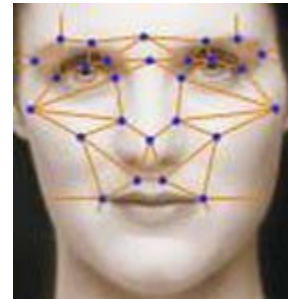
ECEN 4120 (Call # 45307) / ECEN 5120 (Call # 45308) - 3 Cr hrs - 11:00-12:35 MTWRF

Professor: Martin Hagan



Artificial neural networks represent a type of computing that is based on the way that the brain performs computations. Neural networks are good at fitting non-linear functions and recognizing patterns. Consequently, they are used in the aerospace, automotive, banking, defense, electronics, entertainment, financial, insurance, manufacturing, oil and gas, robotics, telecommunications, and transportation industries.

Because neural networks are tools that have application in many areas, the course could be of interest to students from a variety of disciplines: students in electrical engineering who have an interest in signal or image processing, or control systems, students in CS with interests in data mining, AI, biometrics or computer vision, students in math with interests in nonlinear modeling, students in neuroscience with interests in computational neuroscience, students in finance with interests in financial modeling and prediction, students in biology with interests in bioinformatics. *The only prerequisite for this course is linear algebra.*



This course gives an introduction to basic neural network architectures and learning rules. Emphasis is placed on mathematical analysis of these networks, on methods of training them, and on their application to practical problems in areas such as pattern recognition, signal processing, and control systems. The course will show how to construct neural networks and train them to perform useful functions. At the conclusion of the course, students will be able to understand and analyze the major types of neural networks and will be able to design and implement networks to solve practical problems.

About the instructor: For the last 20 years, Dr. Hagan has been involved in the use of neural networks for filtering, prediction, control and pattern recognition. He is author, with Howard Demuth and Mark Beale, of the textbook *Neural Network Design*. He is also a co-author of the *Neural Network Toolbox for MATLAB*. He was awarded the Oklahoma State University Regents Distinguished Teaching Award in 2000 and the Lockheed Martin Aeronautics Teaching Excellence Award in 2005.