GC-7005 Artificial Neural Networks

Synopsis:

Human brain is a complex, nonlinear and parallel information processing system which operates in a way entirely different from conventional digital computers. For instance humans learn from their experiences and adapt accordingly. Artificial Neural Networks (ANN) commonly known as "neural networks" are parallel processing systems resembling a human brain. Typically, neural networks are not explicitly programmed to perform a given task; rather, they learn to do the task from examples of desired input/output behavior. The networks automatically generalize their processing knowledge into previously unseen situations, and they perform well even when the input is noisy, incomplete or inaccurate. In most of the applications of electrical engineering for example nonlinear control, pattern recognition, machine learning etc, the neural network based systems have shown to outperform the conventional computers. This course will cover basic neural network architectures and learning algorithms for different type of applications in electrical engineering. Various forms of learning algorithms will be introduced and applications of these will be discussed. The students will have a chance to try out several of these models on practical problems.

Instructor:

The course will be taught by Dr Imran Naseem (imrannaseem@pafkiet.edu.pk). He holds a PhD degree in Electrical, Electronics and Computer Engineering from the University of Western Australia (UWA). Dr Imran has also worked as a Research Fellow at Curtin University of Technology, Australia. He has published in the highest impact factor journals such as IEEE Transactions on Pattern Analysis and Machine Intelligence and Pattern Recognition Journal. He has a number of research papers and book chapters to his credit including the prestigious IEEE ICIP conference. Current focus of his research is on multimedia signal processing including face recognition and texture analysis.