DEVELOPING NEURAL NETWORK APPLICATIONS USING
LABVIEW

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ABSTRACT

Artificial Neural Networks (ANN) have gained tremendous popularity over the
last few decades. They are considered as substitutes for classical techniques which have
been followed for many years. Many neural network architectures and training algorithms
have been developed so far. Different aspects of ANN such as efficiency, speed,
accuracy, dependability and the like have been studied extensively. Many approaches
have been suggested to improve the performance of neural nets.

In this thesis, a new approach has been proposed to build neural net architectures. LabVIEW is graphical programming software developed by National Instruments. Using LabVIEW, an Application Development Environment (ADE), ready-made Virtual Instruments (VI) can be developed for various applications. This thesis concentrates on a LabVIEW approach to build various neural net structures. The learning algorithms used to train these neural nets also vary according to the requirements and application. Multi-layer feed-forward NN, Radial Basis Function NN, Principal Component NN, and Self-Organizing feature maps have been used as tools to develop applications such as pattern classification, image compression and plant modeling in a LabVIEW environment.