

## ABSTRACT

This thesis presents Decayed Prior Sampling algorithm (DPS) and Region Growing Networks algorithm (RGN) to integrate the existing knowledge of a supervised learning neural networks with the new training data. Both of the methods keep the accuracy of prior knowledge decrease at slow rate, without having to retain the old samples for subsequent learning.

DPS method allows the existing knowledge to age out in slow rate as a neural network is gradually retrained with consecutive sets of new samples, resembling the change of application locality under a consistent environment. RGN method retains the existing knowledge as long as it is not overwritten by a new knowledge of same domain . Three experiments are performed on two cases of 2-dimensional partitions problem and Thai Hand-Written Recognition application, and the results convincingly confirm the effectiveness of the techniques.

