Master of Technology

Unit 2/6: Computational Intelligence I

CA Assignment 1:
Neural Network Ensembles

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CA Assignment

Objectives:

On completion of this CA assignment, students will

- **have a good understanding on the different NN architectures**
- **be able to develop neural network ensembles to solve real-world problems.**

CA Assignment : NN Ensembles

- **Instructions:**

(1) Find two datasets – one classification problem + one regression problem. Each dataset should have at least 5000 records and 50 variables.

(2) Train a group of different types of NNs using different NN tools to solve the two problems. (Use at least 2 different tools to train 2-3 different types of NNs)

(3) You may partition each dataset into several subsets for different purposes.

(4) Train the NNs to achieve the highest possible classification accuracy or lowest possible MSE.

(5) Build NN ensembles

- **Different ways of combining the outputs of individual NNs for final output**
- **Compare the NN performance between the NN ensemble and the individual NNs**

CA Assignment: NN Ensembles

- **Possible NN Tools:**
  - » **R / Rattle /caret/neuralnet/nnet/grnn/pnn/ RSNNS…**
  - » **Weka**
  - » **Python /scikit-learn/neupy/ keras/ tensorflow…**
  - » **Neuroph**
  - » **Neurosolutions**
  - » **NeuralTools -- Palisade**
  - » **RapidMiner**
  - » **……**

CA Assignment: NN Ensembles

- **Submission: (soft copy only) (25 marks)**
  - » **The two datasets**
  - » **A report to describe:**
    - ♦ **the two problems and datasets**
    - ♦ **NN tools you have used**
    - ♦ **your design of the NN Ensembles (architectures)**
    - ♦ **the performance of your NN Ensembles on the two datasets (detailed results)**
    - ♦ **your understanding and findings.**
  - » **R/ Python/Java/… codes, model files, other supporting documents (if any)**

3-5 students per team

Submission deadline: 15/05/2018

Please submit to IVLE KE5206 Files / Student Submission /CA1

Please submit only one ZIP file from each team.