Master of Technology

Unit 2/6: Computational Intelligence I

CA Assignment:
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

- **Two benchmark classification/regression problems:**
  - » **Diabetes.csv**
  - » **Winequality-white.csv**

- **The diabetes data set contains the diagnostic data to investigate whether the patient shows signs of diabetes according to World Health Organization criteria such as the 2-hour post-load plasma glucose.**

- **The winequality-white data is related to the white variants of the Portuguese "Vinho Verde" wine. The goal is to model wine quality based on physicochemical tests.**

- **More details are available in the data description files.**

CA Assignment: NN Ensembles

- **Instructions:**
  - **(1) Train a group of different types of NNs using different NN tools to solve the two problems given. (Use 2 different tools to train 2-3 different types of NNs)**
  - **(2) Work on the two data sets**
    - **You may partition each data set into two subsets: eg 75% as training data and 25% as test data**
  - **(3) Train the NNs to achieve the highest possible classification accuracy or lowest possible MSE.**
  - **(4) NN ensemble**
    - **combine the outputs of individual NNs for final output (you may define certain calculation, such as rule(s) for the integration)**
    - **Compare the NN performance between the NN ensemble and the individual NNs**

CA Assignment: NN Ensembles

- **Possible NN Tools:**
  - » **R / Rattle**
  - » **Weka**
  - » **Neuroph**
  - » **Neurosolutions**
  - » **NeuralTools -- Palisade**
  - » **RapidMiner**
  - » **……**

CA Assignment: NN Ensembles

- **Submission: (soft copy only) (25 marks)**

  A report to describe

  - **NN tools you have used**
  - **your design of the NN Ensemble (architecture)**
  - **the performance of your NN Ensemble on the two data sets (detailed results)**
  - **your understanding and findings.**

  Maximum 2 students per group

  Submission deadline: 31/05/2017

  Please submit your report to IVLE KE5206 Files / Student Submission