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**Learning From Data**

**Lab Task 2 – Banknote Classification**

**Supervised by:**

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**Team Members**

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**The Architecture of MLNN**

* **Inputs:** Variance of wavelet transformed image, skewness of wavelet transformed image, kurtosis of wavelet transformed image, and entropy of image.
* **Nodes:** 4 nodes in first layer, 4 nodes in second layer, one node in output layer.
* **Output:** Class.
* **Layers:** 3 layers.
* **Activation Function for all layers:** Sigmoid.

**Training and Testing**

* **Initial set of weights:**
* First layer weights:

**Table

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* Second layer weights:

Text

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* Third layer weights:

Graphical user interface

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* **Training to testing ratio:** 0.70:0.30.
* **Number of epochs:** 50.
* **Patch size:** 10.
* **Epoch results:**

**Background pattern

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* **Final set of weights:**
* Text

  Description automatically generatedFirst layer weights:
* Text, letter

  Description automatically generatedSecond layer weights:
* Third layer weights:

Graphical user interface, application

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* **Confusion matrix:**

Chart

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* **Table

  Description automatically generatedClassification report:**
* **Accuracy:** 99.50617283950616.

**Plots**

* Chart, shape, rectangle

  Description automatically generatedTraining and testing accuracy:
* Chart

  Description automatically generatedTraining and testing error:
* Chart

  Description automatically generatedROC: