

## CST 476-2 Deep Learning

### Lab Sheet 03

#### Activity: Sentiment Analysis with Recurrent Neural Networks (RNNs) using UCI Amazon Cells Labelled Dataset

##### Aim:

The aim of this lab session is to implement a sentiment analysis model using RNNs to classify sentences from a given dataset into positive or negative sentiment.

##### Dataset:

UCI Amazon Cells Labelled Dataset

##### Description of the Dataset:

The "Amazon Cells Labelled" dataset, commonly known as the "Amazon Reviews for Sentiment Analysis" dataset, is a collection of text reviews from Amazon customers. Specifically, this dataset focuses on reviews related to cell phones and accessories. Each review in the dataset is labeled with sentiment, indicating whether the review expresses a positive or negative opinion.

##### Tasks:

- Download the dataset from the VLE.
- Open your Jupyter Notebook environment and import the necessary libraries.
- Split the dataset into training and test sets (use 0.2 for the test dataset).
- Tokenize the raw text to create a vocabulary for the experiment.
- Convert words into numeric representations using the Tokenizer object created in the previous step.
- Use padding to make the input the same size to be compatible with the Embedding layer.
- Build a Vanilla RNN model to effectively classify the given inputs.
- Compile the model, specifying the optimizer and loss function.
- Train the model using the training dataset.
- Evaluate the model's performance on the test dataset.
- Experiment with model training by changing RNN architecture, the number of layers, the number of filters, architecture, activation function, adjusting the learning rate, changing other hyperparameters, etc.