COMP8270
Programming for Artificial Intelligence

Class 12

In this practical class we will gain experience with creating regression ANNs with Keras. Familiarity with the material from lecture 16 is essential for the successful completion of this class. We will create a simple training set and use it to train an ANN. We will teach our ANN cosine.

Create a new jupyter notebook and call it Class 12.

Steps:

1. Import Keras, and any others packages that you will need.
2. Create your training set:
    a. Create 32 values of x between 0 and 1.571
    b. Create your y = cos (x)
    c. You should now have 32 pairs of the form: (x, cos (x))
3. Normalize your x's so that they are between 0 and 1.
4. Create your Keras ANN. For the layers use { 1, 5, 3, 1 }.
    a. Use the parameters from the lecture unless otherwise specified.
5. Compile and train your ANN.
    a. Use epochs = 3000
    b. Remember the asterisk in the cell label means it is working: "[*]" It is perfectly normal to take around 1-2 minutes.
6. Compare the results to your training data. How did you do?

If you have spare time play with the number of epochs. What effect does it have on the final loss?

Play with the architecture of your ANN (don't forget to compile your model). What effect does it have on training time and loss?