CISC/CMPE452/COGS400
Assignment 3
PCA Network
(only for undergrad students)

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5 Marks

General Instructions for Code and Submission (for all assignments)

1. You can use any programming language (preferred C, C++, Java, or Matlab)
2. Make **one zip file named as Asg2_studentID**.
3. **Upload zip file** to the OnQ site. Multiple uploads are allowed. Only the most recent version will be kept.

Assignment 3 : The Data Set Data (x1, x2)

- This is a Cocktail Party Problem with two sound sources and two microphones. The dataset 'sound.csv' contains two sounds recorded by the two microphones.
- The range of the data values is between -1 and 1.
- (Notes that the original two 'wav' files can also be downloaded. The 'wav' data have 8 bit value [0, 256] with single channel.
- The original sound data is downloaded from http://research.ics.aalto.fi/ica/cocktail/cocktail_en.cgi
- The explanation of the canonical wave file format: http://soundfile.sapp.org/doc/WaveFormat/)

(The output will represent one of the sound sources.)

Assignment 3 : Tasks

1. The goal of this assignment is to design and implement a PCA network to find the approximation of the first principal component given the sound data set. (accuracy of coding and algorithm, clarity, comments and executable program = **3 marks**). Must provide all necessary components and instructions to execute your code otherwise you will lose points.
2. Note down and explain your design choices in a text file. Example:
   - Initial weights, final weights, leaning rate, termination criteria (**1 mark**)
3. Write the output in another CSV file. Use the function from your last assignment to create the output file. (If you can convert the output data into a 'wav' file, please also submit it.) (**1 mark**)
4. One mark will be deducted for each day of late submission (unless you have special accommodation) and the submission folder will be open for 3 days after the due date.

Submit

- The program code with comments, executable code (if applicable). (#1 last slide)
- A text file with all design choices. (#2 last slide)
- A text file with the output (#3 last slide)
- Combine all the above in one zip file **named as Asg3_studentID** and upload that on OnQ.
- Missing submission will be marked as 0. If we find anyone copying other's code, both students will be penalized.