Some of our sample interview questions based on job profile and your interest! The more domains you are good at, the better is the chance of you getting hired…

Linear Algebra:

1. What is the difference between Eigen decomposition and SVD?
2. Intuitively, please explain which of the above is better for PCA?
3. What is the physical significance of U, ∑, V in SVD?

Computer Vision:

1. Where is Hessian used in image processing?
2. What are some ways of designing a low pass filter by processing images in the frequency and the spatial domain? Can you design a high pass filter using spatial domain?
3. How can one measure image textures?

Machine Learning:

1. Why does back propagation work in Neural networks? Why do you think deep learning works? What could be pitfalls of deep learning?
2. Can you explain how error curves change with respect to # of features, regularization and training set-size? Please identify bias (vs) variance regions in the error curves
3. Can you think of a machine learning problem where parametric models may be better than non-parametric models?

Parallel Computing:

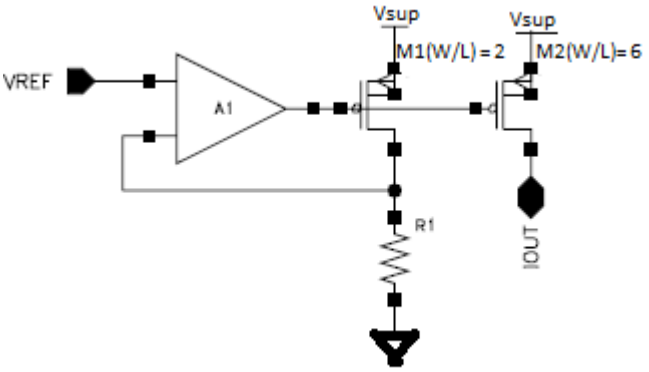
1. Explain the relationship between warps, threads and blocks.
2. GPU Texture memory – Can we access individual elements in texture cache for direct processing?
3. I need to sort a billion C++ int values. If you can use GPUs for this problem, will you use them?
4. Can GPU occupancy effect the type of algorithms you run?

Signal Processing:

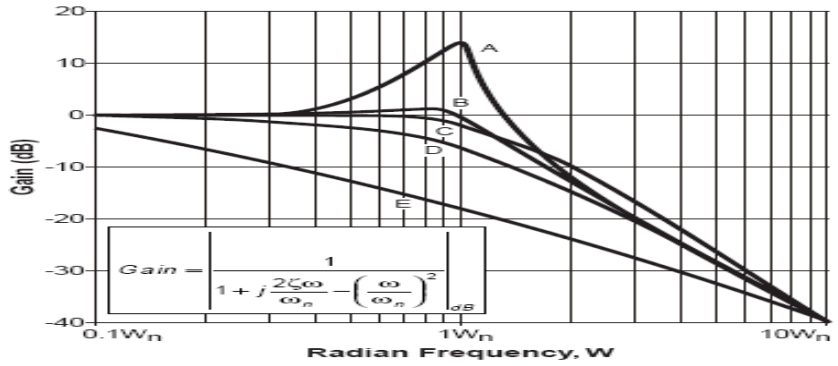
1. What are negative and complex frequencies? Please give intuitive answers.
2. Intuitive difference between Fourier transform and Laplace transform.
3. Can we generate $e^{j2\pi ft}$ signal in the lab and observe on an oscilloscope? Please explain your answer.

Electronics:

1. Design a state machine to run a 2-ph stepper motor.
2. Please write the equation for IOUT in the following figure. Also, mark the polarity of Opamp (A1) i.e. what is VREF connected to, positive or the negative terminal of A1?



3. The following figure has plots of frequency response for various unity gain systems (closed loop). Which among the systems (A,B,C,D,E) has the lowest phase margin, has the highest phase margin and a phase margin of about 65° in open loop.



A = ζ = 0.1; **B** = ζ = 0.5; **C** = ζ = 0.707; **D** = ζ = 1.0; **E** = ζ = 4.0

Figure 5 Second order frequency response for various damping factors (ζ)

C/C++: (MANDATORY)

1. Parallel Computing (Inter Process Communication):

   There are 2 power stations that are continuously reading temperature using sensors and sending the temperature data to a control station. Control station should read the data coming from both power stations and trigger an alert if the temperature is beyond a certain threshold.
   Write a Program to implement this solution.

2. Pointer and Data Structure basics

   Write a program to implement a Single linked list / double linked list and perform any sorting operation on it.

3. C programming basics
   a. Write a program which will reverse the string words - NOT characters

   Example:
   Input string to the program: "C Programming is Awesome"
   Output string from the program: "Awesome is Programming C"

b. Given an unsorted array and a number n, find if there exists a pair of elements in the array whose difference is n. Return count of such pairs.

Example: k=4 and a[]={7,623,19,10,11,9,3,15}
Output should be : 6 Pairs can be: 7,11 7,3 6,10 19,23 15,19 15,11