

Embedded and DTSP Lab(304215)

Teaching Scheme:
Practical 4Hrs/Week

Examination Scheme:
PR:50 Marks
TW: 50 Marks

Embedded Processors

List of Experiments:

Group A: LPC2148 Based Experiments

1. Interfacing LPC2148 to LCD/GLCD
2. UART Interfacing LPC2148 in embedded system (GSM/GPS)
3. Interfacing LPC2148 for internal ADC on interrupt basis
4. Interfacing SD card to LPC2148
5. Interfacing EEPROM to LPC2148 using I2C protocol

Group B: LPC1768 Based Experiments

6. Interfacing LPC1768 to Seven Segment / RGB LED
7. Generation of PWM signal for motor control using LPC1768
8. Interfacing TFT display to LPC1768
9. Implementing CAN protocol using LPC1768
10. Implementing ETHERNET protocol using LPC1768

DTSP

Instructions:

- a) Minimum eight practical's to be performed.
- b) Practical number 12 is mandatory.

Note: Practical 1 to 11 can be performed in any appropriate software like C/MATLAB/SCILAB etc.

1. Implement the sampling theorem and aliasing effects by sampling an analog signal with various sampling frequencies.
2. To study the properties of DFT. Write programs to confirm all DFT properties.
3. To study the circular convolution for calculation of linear convolution and aliasing effect. Take two sequences of length 4. Write a program to find 4 point circular convolution and compare the result with 8 point circular convolution to study aliasing in time domain.
4. (a) To find Z and inverse Z transform and pole zero plot of Z-transfer function.
(b) To solve the difference equation and find the system response using Z transform.
5. To plot the poles and zeros of a transfer function when the coefficients of the transfer function are given, study stability of different transfer functions.

6. To study the effect of different windows on FIR filter response. Pass the filter coefficients designed in experiment 6 via different windows and see the effect on the filter response.
7. Design Butterworth filter using Bilinear transformation method for LPF and write a program to draw the frequency response of the filter.
8. To plot the mapping function used in bilinear transformation method of IIR filter design.(assignment may be given)
9. Effect of coefficient quantization on the impulse response of the filter using direct form I and II realization and cascade realization.(theory assignment)
10. Design and implement two stage sampling rate converter.
11. Computation of DCT and IDCT of a discrete time signal and comment on energy compaction density.
12. To implement at least one of the following operations using DSP Processor
 - i) Linear and Circular convolution.
 - ii) Low pass filter an audio signal input to DSK with FIR filter.
 - iii) Low pass filter an audio signal input to DSK with IIR filter.To generate sine wave using lookup table with table values generated within the programme.