**Digital Signal Processing Lab**

**Dt.** 10-01-2022

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**Course Topics:** MA Filter and Derivative Filtrr

Submission deadline: MATLAB Program: **15th Jan 2022 before 5.30 PM (Strictly followed)**

**Please do not copy. It is your responsibility in clarifying your doubts during the class session or after class session before coming to next lecture class.**

Learning by doing or solving, learning by actively participating in class, and Learning by clarifying doubts in class

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1. **Design M-point moving average filter to smooth out the high-frequency noises.**
2. Write the difference equation of this system
3. Obtain the transfer function of this system
4. Find the frequency response
5. Sketch the magnitude response and phase response
6. Find the poles and zeros of this system
7. Sketch the poles-zeros in z-plane.
8. Study the magnitude responses of the moving average filter with M=10, 25, 50, 100 by plotting their magnitude responses
9. Obtain the outputs of the moving average filter with M=10, 25, 50, 100 for the 2 second PPG signal and ECG signal. Write your observations based on the outputs.
10. **Design the first-order, second order and central derivative filters to emphasize the high-frequency portions in the signals**.
    1. Write the difference equation of this system
    2. Obtain the transfer function of this system
    3. Find the frequency response
    4. Sketch the magnitude response and phase response
    5. Find the poles and zeros of this system
    6. Sketch the poles-zeros.
    7. Obtain the outputs of the derivative filters for the PPG and ECG signals. Write your observations based on the outputs