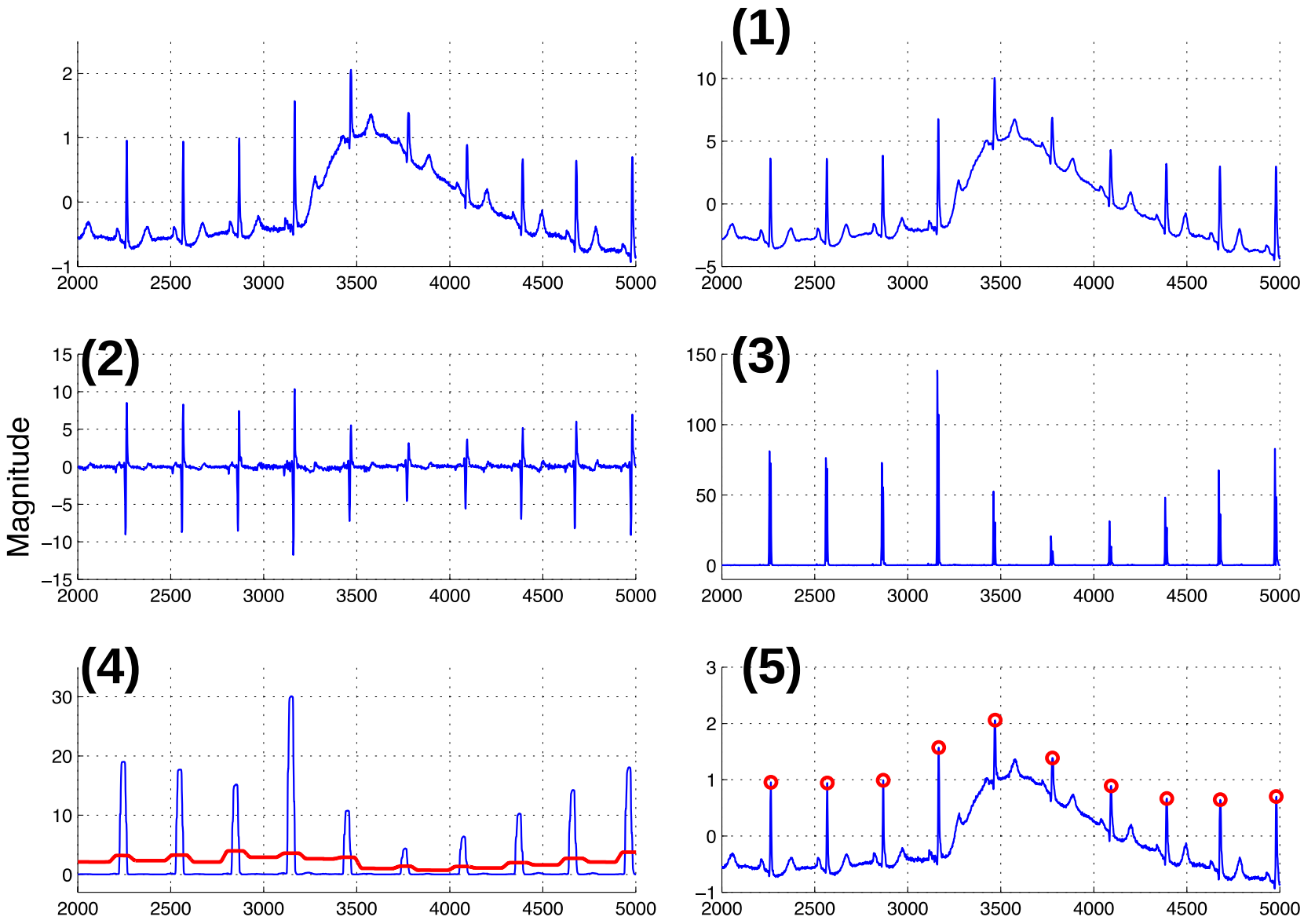
數位訊號處理實驗
Digital Signal Processing Laboratory
Lab 4
Heart Rate Detection

Task 1

- Detect the R wave from your recorded ECG signals.

Pre-Processing of ECG Signals (3/3)



Task 3

- Implement the pre-processing of the ECG signals(Lab 3) and R-peak detection in real time and display the processed ECG signals and the R-peaks in real time.
  - Better modularize your signal processing flow. That is, please make each block as a function and then perform function calls.
  - Note that you can implement your signal processing modules in PC or in Arduino.
  - Can you display “Heart Rate” (Inverse of the RR interval) in real time?
  - Can you “beep” for each R peak

Task 2

- Find the R-peaks in MIT-BIH database.

(You have to take care "**group delay**" introduced by your linear phase FIR filtering in order to obtain the almost the same R-peak time as provided by the MIT-BIH database)

  - Detailed description about the provided data, please see the Lab 4 on the LMS e-learning system.
  - Please draw a table in your report. The first column is the name of the data set, the 2nd column is TP, the 3rd column is FN, and the 4th column is FP.
  - Please justify how you estimate your TP, FN, and FP and the precision when matching your results with the ground truth.

Potential Final Projects