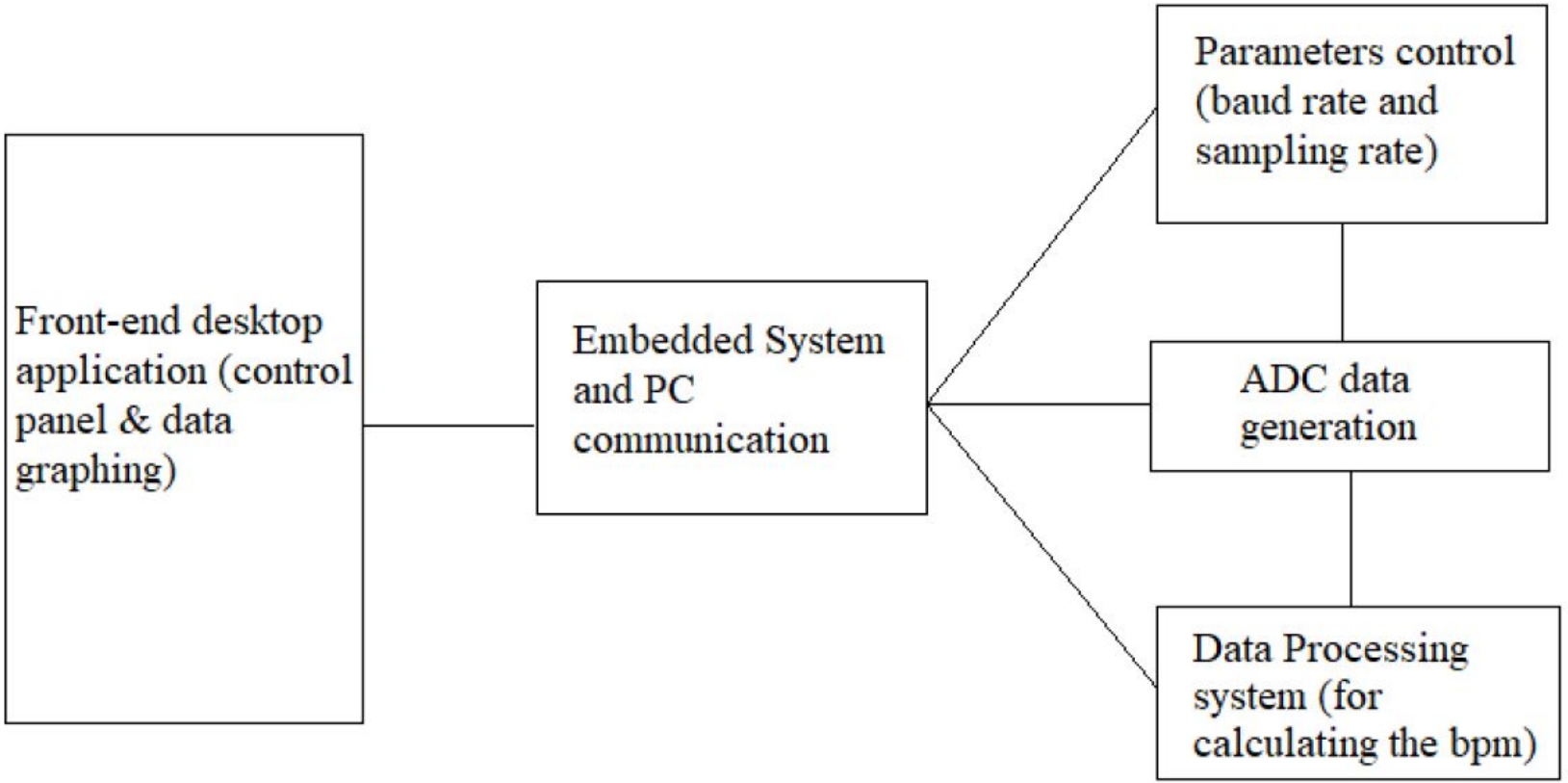
Embedded Systems Project

Heart Monitor

Eslam A. Soliman
900163257

Proposed System Architecture



Current Progress

1- Almost complete back-end

2- PC bidirectional communication through UART

3- Transmitting and plotting (via 3rd party software) 1-min worth of ECG data

4- Configurable sampling rate (50:500:50)

PC Communication Protocol

Commands are sent to the PC via UART as 2-character ASCII string that represents a number from 0 to 11.

Commands Encoding:

“00”: Collect 1-min worth of data
“11”: Calculate and display heart beat rate (bpm) - to be implemented
Values in-between: Setting sampling rate as a multiple of 50s

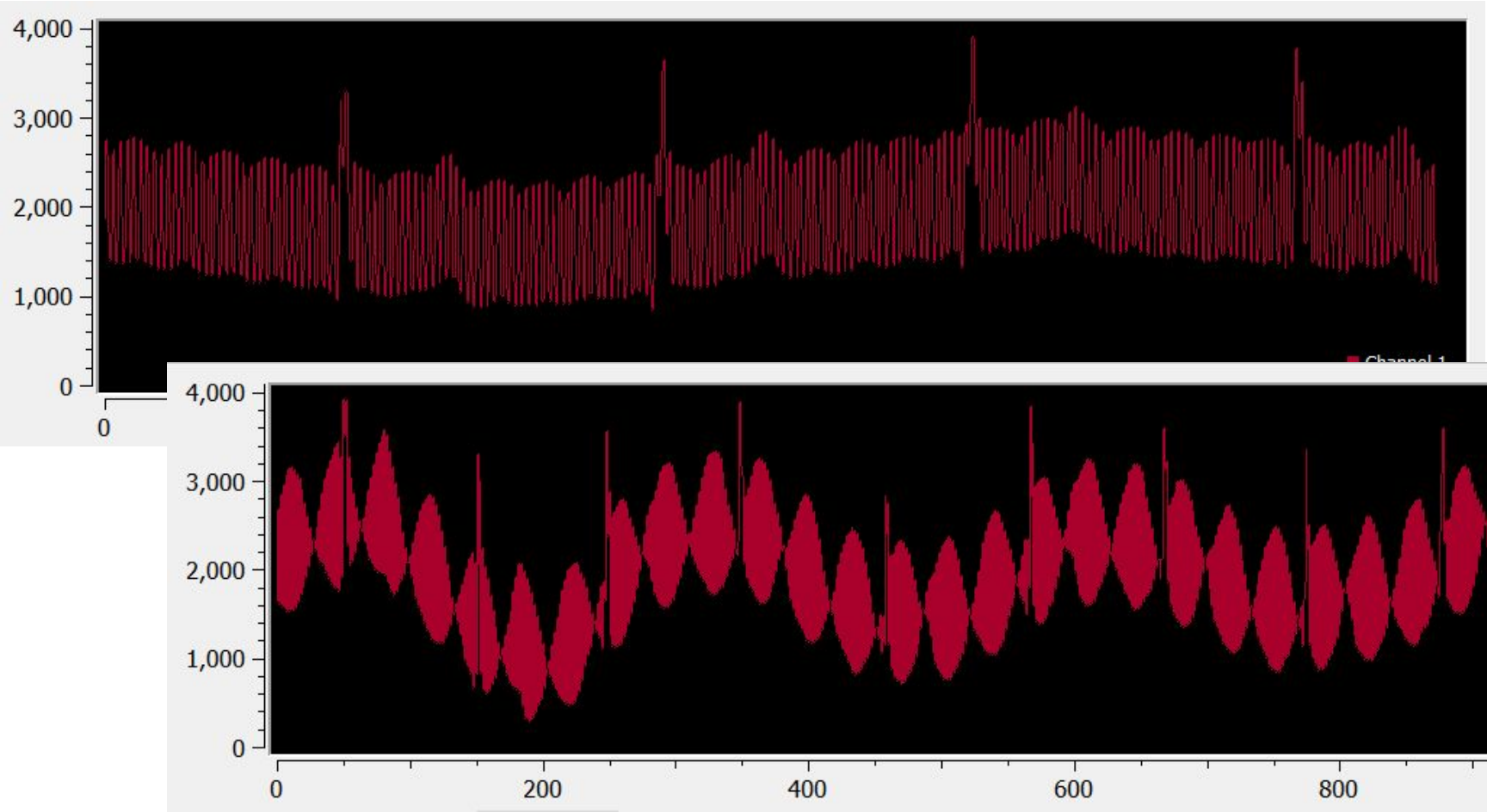
Current Assumptions/Decisions

- If the user sends a command for setting the sampling rate while collection and transmitting the ECG data, the command will be considered and applied for future transactions, not affecting the currently running process.

Used Configurations

- System clock is set to 8MHz
- ADC clock is set to 4MHz
- Analog to Digital sampling and transmitting is done via timer interrupt

Screenshots



Possible Upgrades

- Pass the sensor signal through a high-pass filter to eliminate the high frequency noise.