

CE3002: Sensors, Interfacing and Control

Lab Project Briefing

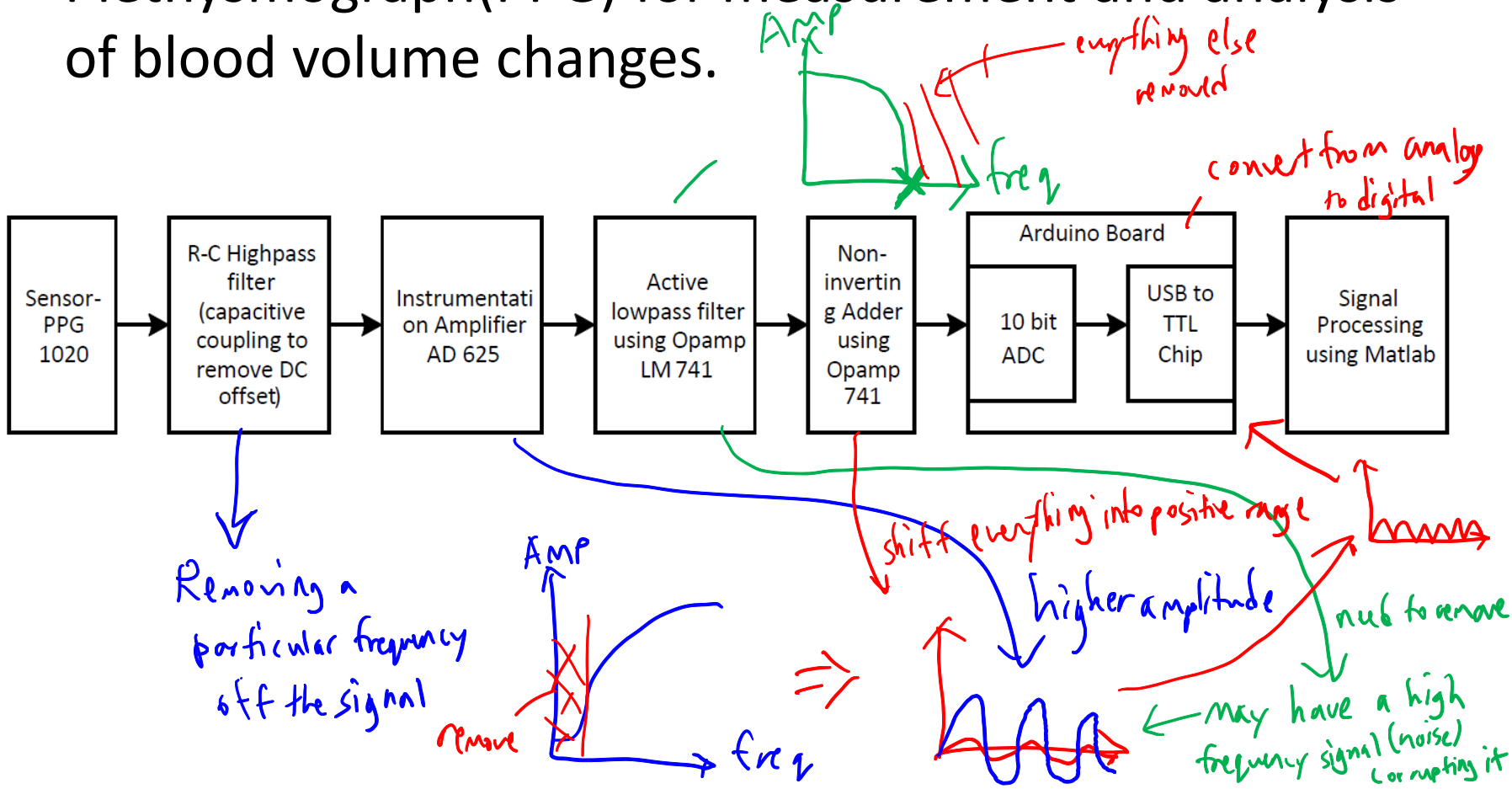
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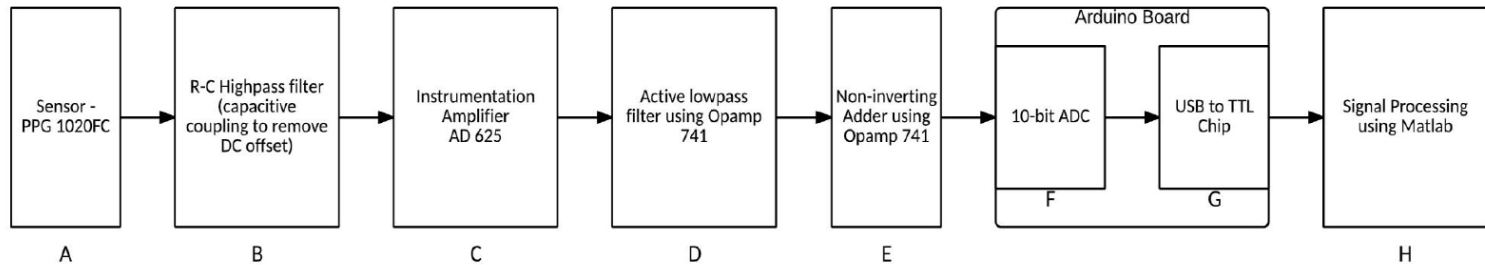
Objective

- Design & Implementation of a PC-based Infrared Plethysmograph(PPG) for measurement and analysis of blood volume changes.

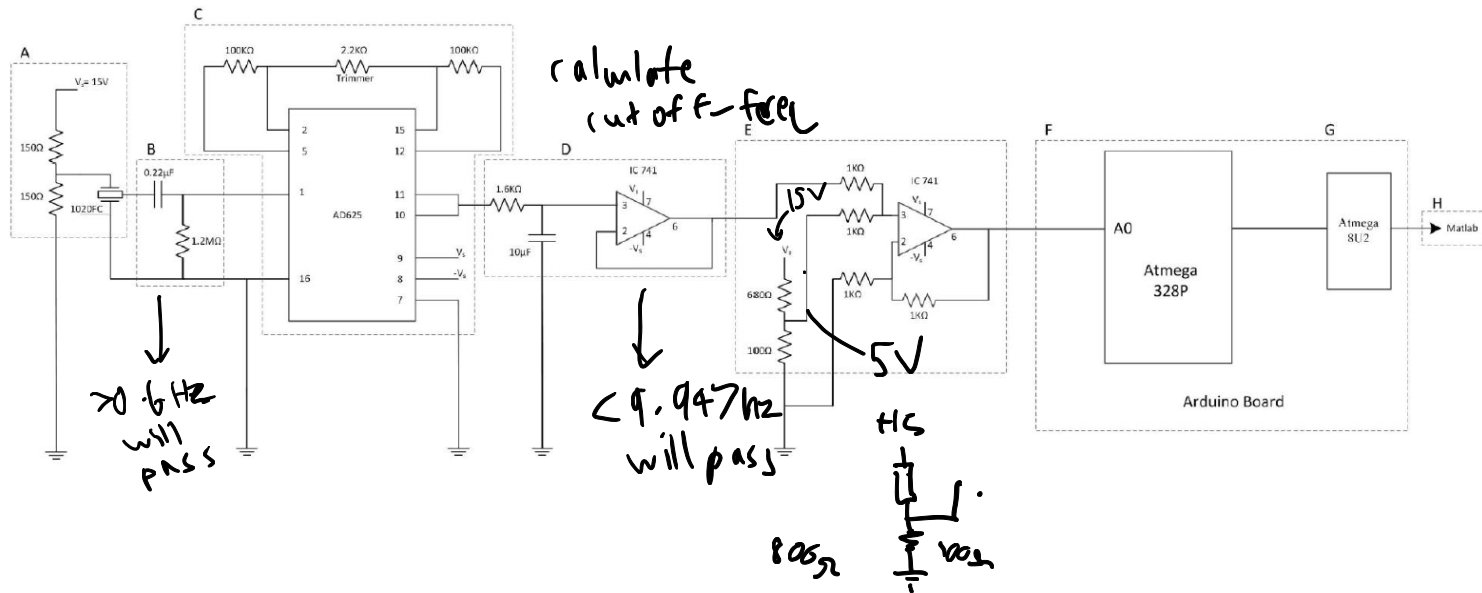


Circuit Diagram

- Data sci. add on?
- Show heart rate?
- hardware/software?



- V_L offset
1 V

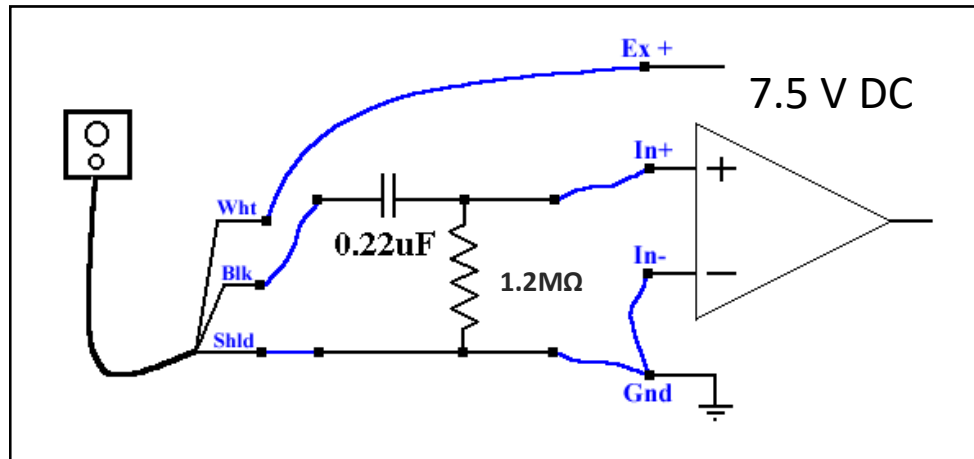


Resources

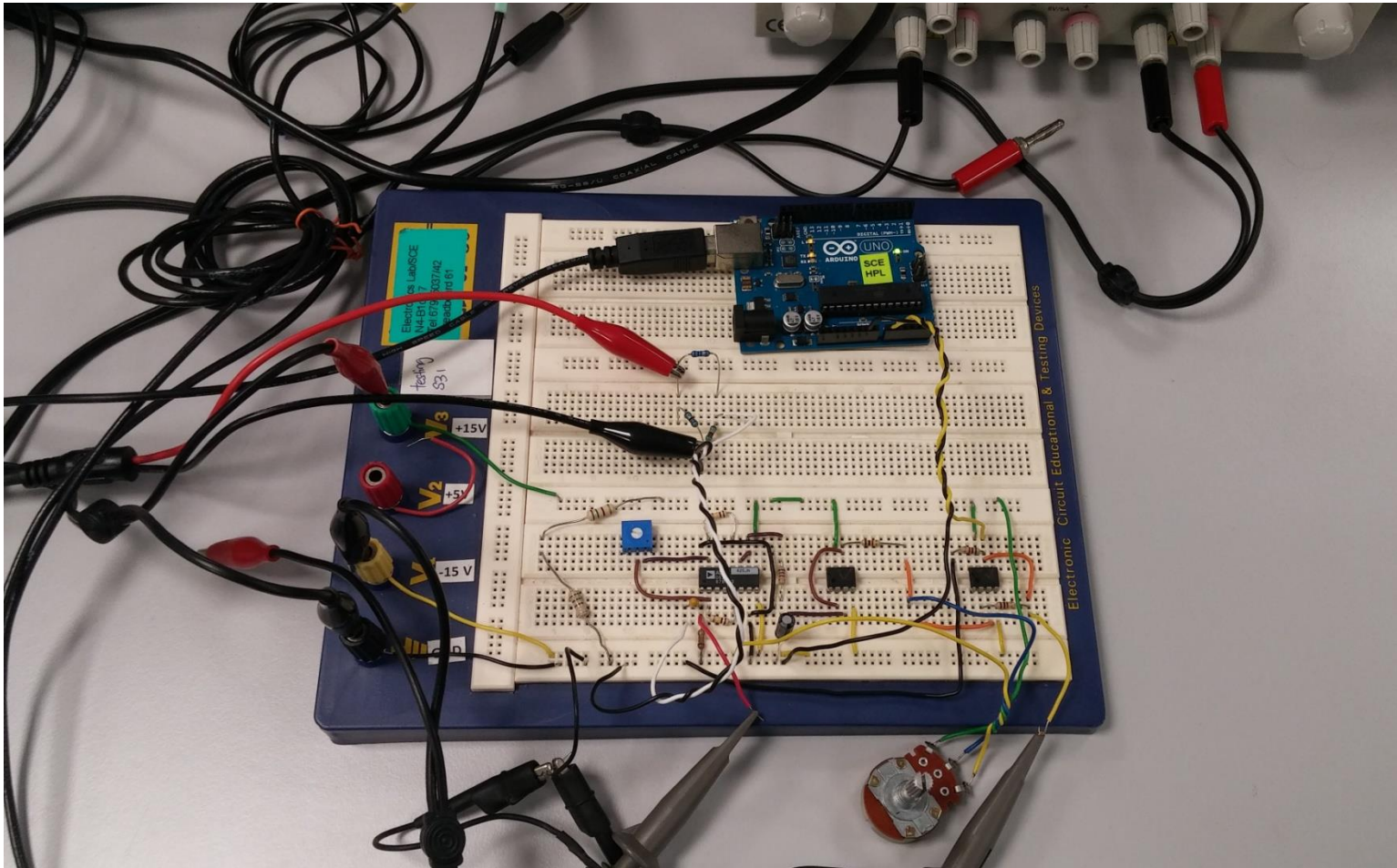
- Hardware Kit
- Power supply (+15V & -15V)
- Oscilloscope
- Signal generator
- Lab manual
- Useful notes
- Code
 - Arduino
 - MATLAB

Suggestion and notes

- Use signal generator to test your circuit
 - The PPG sensor sometimes has uncertainty
 - 20mV (peak-to-peak), sine wave, 500mHz
- Well keep the hardware components
 - PPG sensor expensive
 - Restore if lost



A completed sample



Evaluation

- Demo (60% - common score for a team)
 - Basic functionality (40%)
 - Major component (e.g., amp) missed: 0 points
 - Partially functioning with small issues: 20 points
 - Fully functioning: 40 points
 - Additional features (20%)
 - E.g., real-time pulse rate, weak signal alert, etc
- Oral (40% - individual scores for team members)
 - State your contribution
 - Q/A

Evaluation (cont'd)

- Final evaluation in the last lab session
 - Week 12 for TE1, SE2
 - Week 11 for TE2, TE3, SE1, SE3
- 10% bonus marks, if the project is ready for evaluation by
 - Week 10 for TE1, SE2
 - Week 9 for TE2, TE3, SE1, SE3