CARLETON UNIVERSITY
Department of Systems and Computer Engineering

SYSC 3203
Project Title: EMG-Controlled Mouse
Laboratory: Deliverable #1B: Amplifier / gain stage

1. Gain stage design

The gain stage should be a simple non-inverting op-amp design as shown in Figure 1.

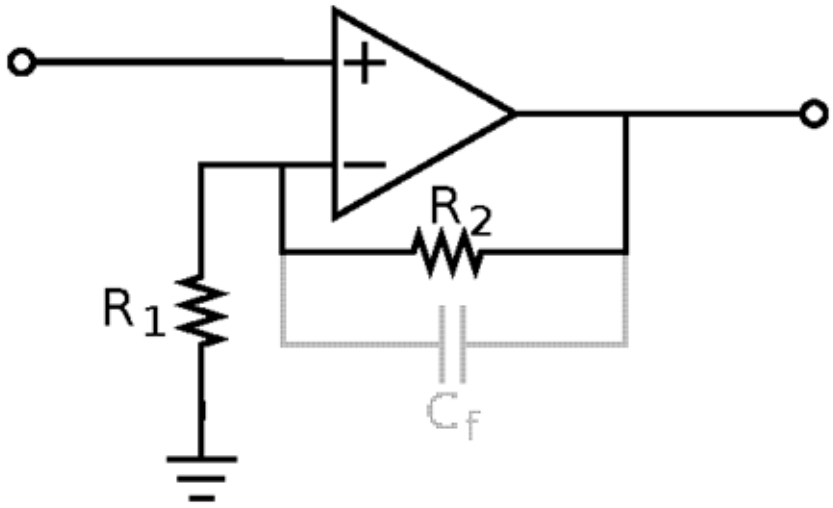

Figure 1: gain stage with optional low pass filtering

1.1: Choose resistors R_1 and R_2 to give a voltage gain of x40. Show your calculations.

1.2: Choose C_f to make the gain of your circuit start to roll off above approximately 1 kHz. Show your calculations.

2. Gain stage assembly and test

2.1: Sketch the circuit diagram for the common-mode driver.

2.2: Draw a schematic of your circuit, showing the chip layout for the OP97 op-amp and labeling all of its terminals. Please also label the testing points for your circuit.

Implement your gain stage using an OP97 op-amp from your kit. Using the function generator and oscilloscope:

2.3: Verify that your circuit achieves the designed gain value. Explain your results to your TA.

2.4: Estimate the 3dB rolloff frequency of your circuit i.e. the frequency at which the output voltage reaches 1/√2 of its value at DC. Verify the result with your TA.