

ECE 376 - Homework #7

Student t-Test, D/A Converters. Due Monday, October 17th

t-Test & Reflex Times

1) Write a program to measure your reflex times

- The game starts by pressing RB0
- Once pressed, the PIC will wait between 3.00 and 7.00 seconds (random)
- It then turns on the lights on PORTA
- It then waits for you to press RB0 again

Your reflex time is the time delay between the lights on PORTA turning on and your pressing RB0.

Measure this time to 1ms.

2) Collect some data using your program to record your reflex times.

3) Use a t-test, determine

- The 90% confidence interval for your reflex time,
- The probability that you will respond in less than 200ms in your next trial, and

The probability that your average reflex time is less than 200ms

4) Measure the reflex time of someone else. Using a t-test, determine

- The probability that your reflex time will be less than the other person's time the next time you run this experiment
- The probability that your average reflex time is less than the other person's average reflex time.

D/A Converters

Turn your PIC into a device which

- Takes an input voltage ($X = 0..5V$), and
- Outputs the square root of the voltage ($Y = \sqrt{X}$) on the D/A converter

5) Give your C code and flow chart

6) Collect data for X and Y

7) From your data, compute the 90% confidence interval for the error in the output voltage (Y)