

## Assignment 2 - (10 points)

Your assignment for next Friday (the 5th) is to provide an estimate of the melting point of the alloy Cerrolodium using calibrated measurements from a new sensor.

You are given a binary data file "A2-CalibrationData.bin" which contains measurements (binary float values) of the melting point of Fieldium, which is known to be 31.006277 degrees Celsius. The measurements were obtained using the newly-developed IDAK X1 sensor, which has not been rigorously calibrated.

You are also given a data file "A2-MeasurementData.bin", which contains independent measurements (binary float values) from the IDAK X1 sensor of the melting point of Cerrolodium.

Your output will be estimates of the bias and standard deviation (i.e., square root of the error variance) associated with measurements from the IDAK sensor and your final estimate of the melting point of Cerrolodium. Your three numbers should be printed with a minimum of six-decimal precision.

Note that the data files contain data in binary form, so you'll need to use fread to read the float values. The values were written as: fwrite(fp, measurement, 'float');

As always, email your PDF submission to me directly at: uhlmannj@missouri.edu

**Scoring criteria:** 10 points for a correct result or 5 points for a result that is at least approximately correct (otherwise zero points). A bonus point is available for optimal accuracy.

```
% bias_in_a_measurement = calibrated - measurement
residual = calibration - measurements;
bias = average(residual);

% root mean square error(RMSE)
RMSE = sqrt((residual' * residual) / length(measurements));
```