Original Data: Draft

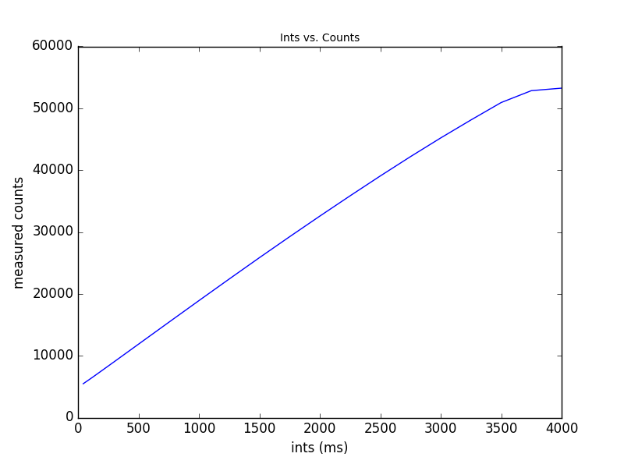
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Context:

The context to this report is to check known data in order to view how the program works. Because the results of the linearity of this data set is know, I wanted to check my program writing to see if my results were on par with what was already observed. Through this, I could then look back upon my programming and see if what I did was correct. Here are the results I gained compared with what was obtained in the original report.

Ints vs. Counts:



Read files in through fits

Adjusted parameters to equal original analysis’ parameters

Analyzed counts in that section of the image for each picture

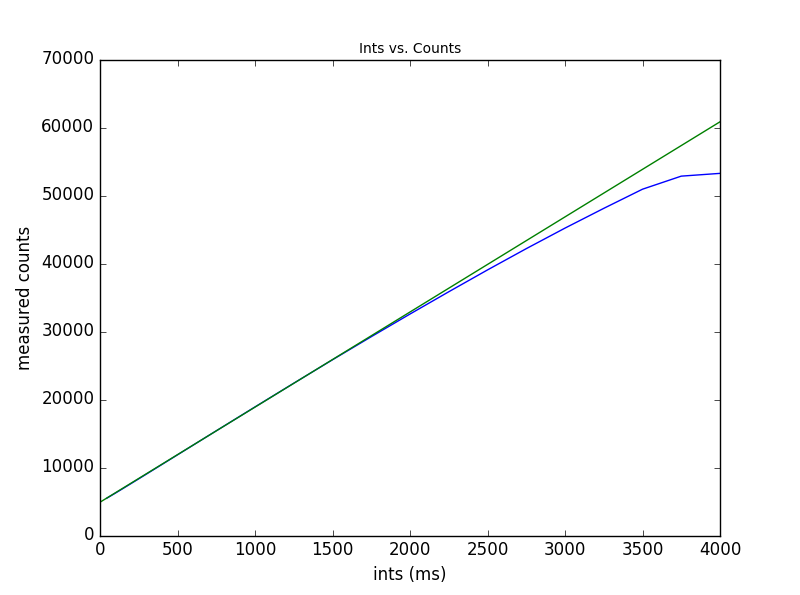
Grabbed ints measurement from each f the headers in the picture.

Data was stored in ‘int’ and ‘counts’ arrays, respectively.

Graphed ints on x axis and counts on y axis.

Looks exactly like original data – makes sense because I used the same parameters.

Ints vs. Counts with linear relationship:



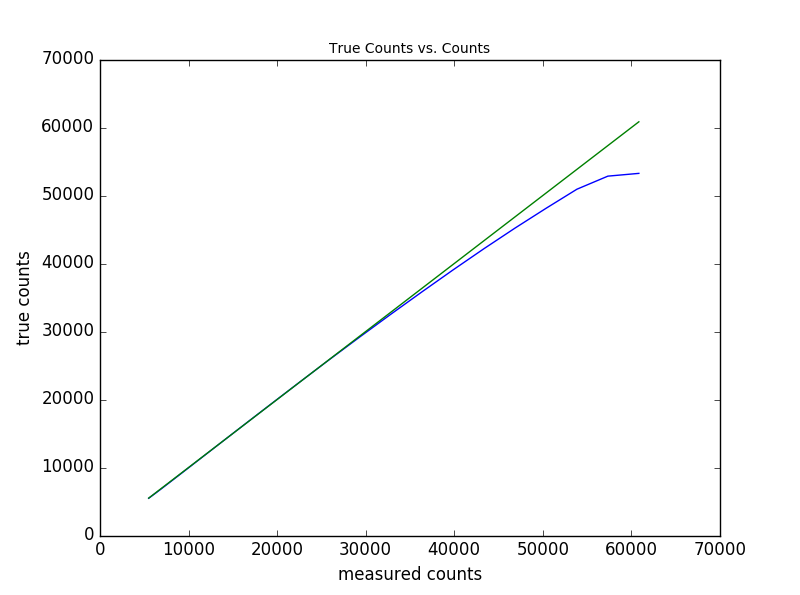
Coefficients for the line: [ 4894.75638298 13.98609149]

Coefficients for original data as reported previously: [13.9820 4892.02]

Explanation of difference: I would attribute this to the program’s calculation of the coefficients. I used the same ranges and values for the data compared to the original report, so I believe that the small difference was due to polyfit error.

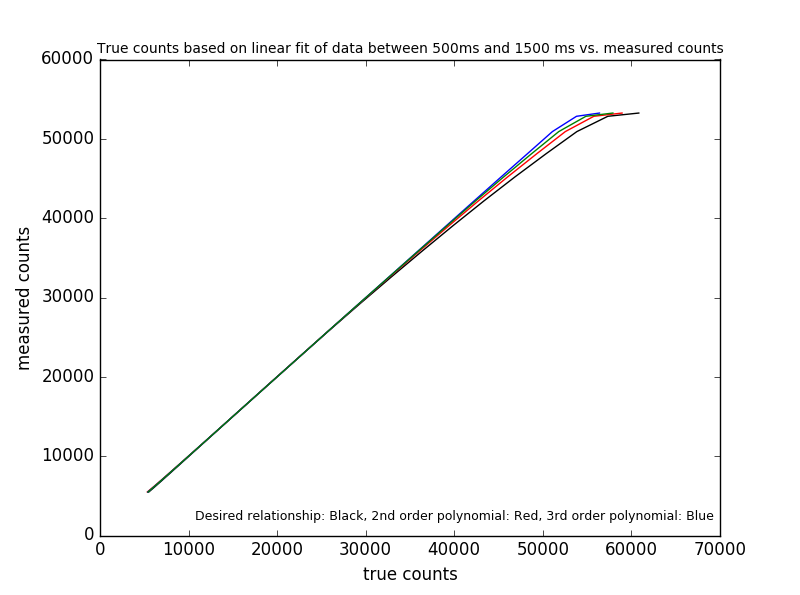
Is there any way to find the error or compare the two?

True counts vs. Measured Counts with linear:



Is there a basis of comparison I can use for this one?

True counts vs. Measured Counts with all:



Coefficients first order: [ 13.98203447 4904.12914894]

Coefficients second order: [ -2.11825705e-04 1.44034324e+01 4.72047176e+03]

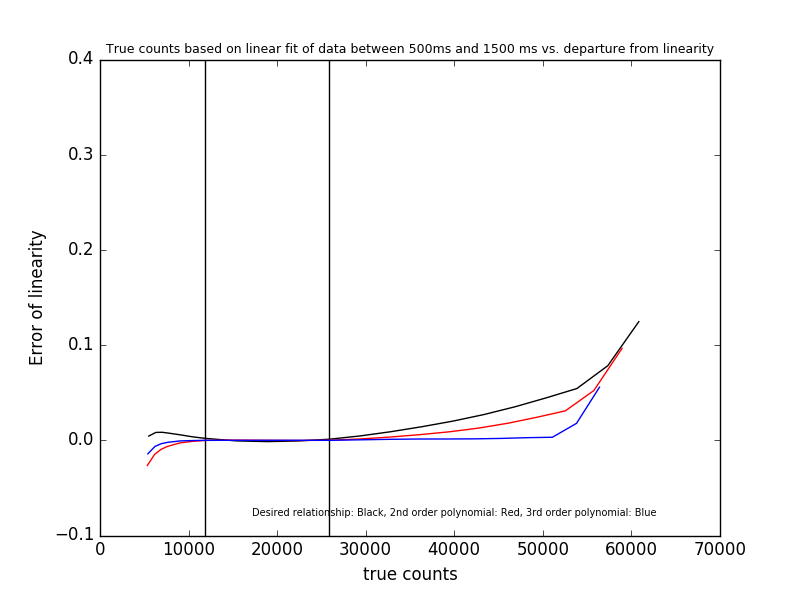
Coefficients third order: [ -9.65189646e-08 7.72773376e-05 1.41351347e+01 4.79620246e+03]

Report coefficients: [4.6e-11 -1.41e-6 1.00273 112.575]

Why the difference between the two coefficient measurements?

Calculate coefficients in some other way??

Error of Linearity vs. True Counts



Again, no line seems to really line up with the desired relationship for some reason. This is in contrast to the data set on the other report, as with that, the third order relationship seemed to line up pretty well. To add to this mystery, the error of linearity graph for this data set looks very similar to the graph of linearity of the previous data set. Whether this is due to the program or some other factors is currently unknown. I am currently taking steps to see if the data fit for this data is actually correct.

Analyzing the Data:

From the error of linearity plot, I discovered that the second order equation behaved more closely to the desired relationship. Now, the reason I couldn’t add fourth order is because there were only 23 items on each list (due to me averaging the ints and counts into separate lists), so the fourth order polyfit had some odd behavior. After consolidating my data and limits and methods across three python files, I finally came up with that error of linearity graph, which was a marked improvement over what I was producing previously. However, because I couldn’t get any order to exactly match up to the desired relationship, I was at a loss for things to do. That’s why I am writing this report and organizing all my files: to get some ideas or something, or to notice a method that I did wrong.

Here’s to hoping that happens.