

CS CM 182 Lab 10

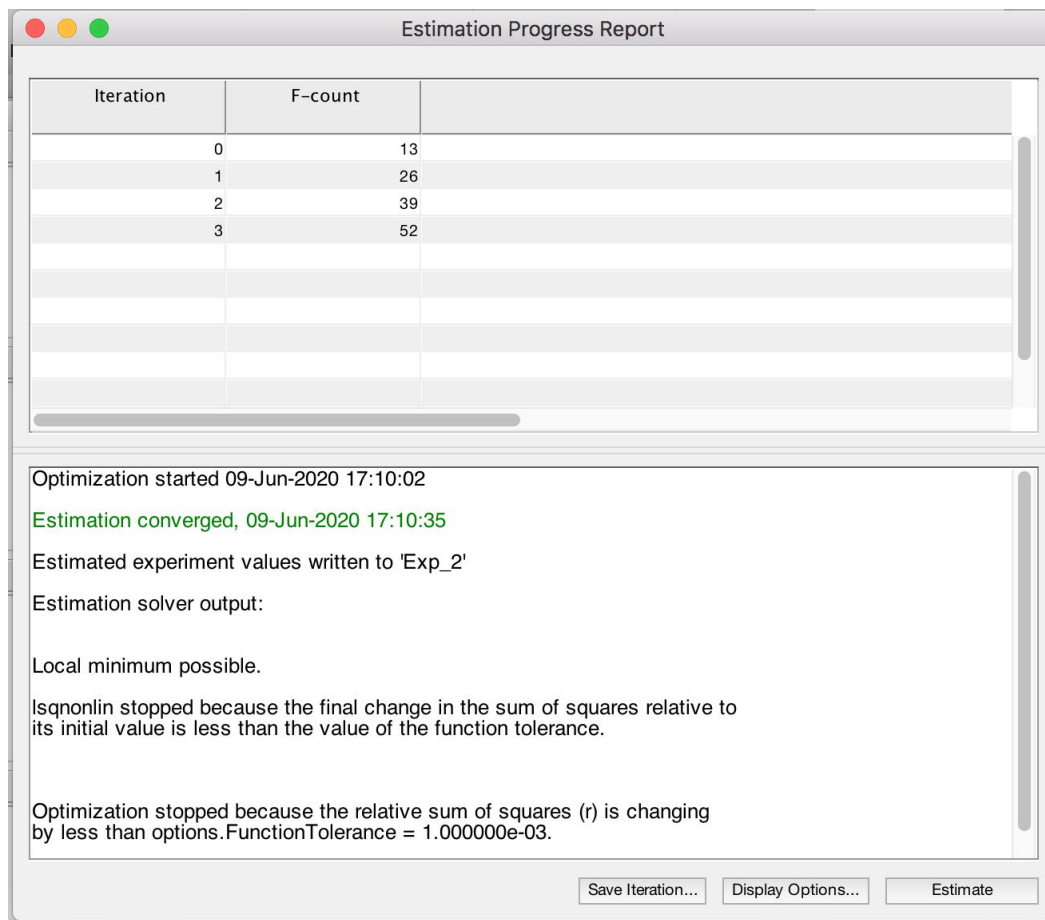
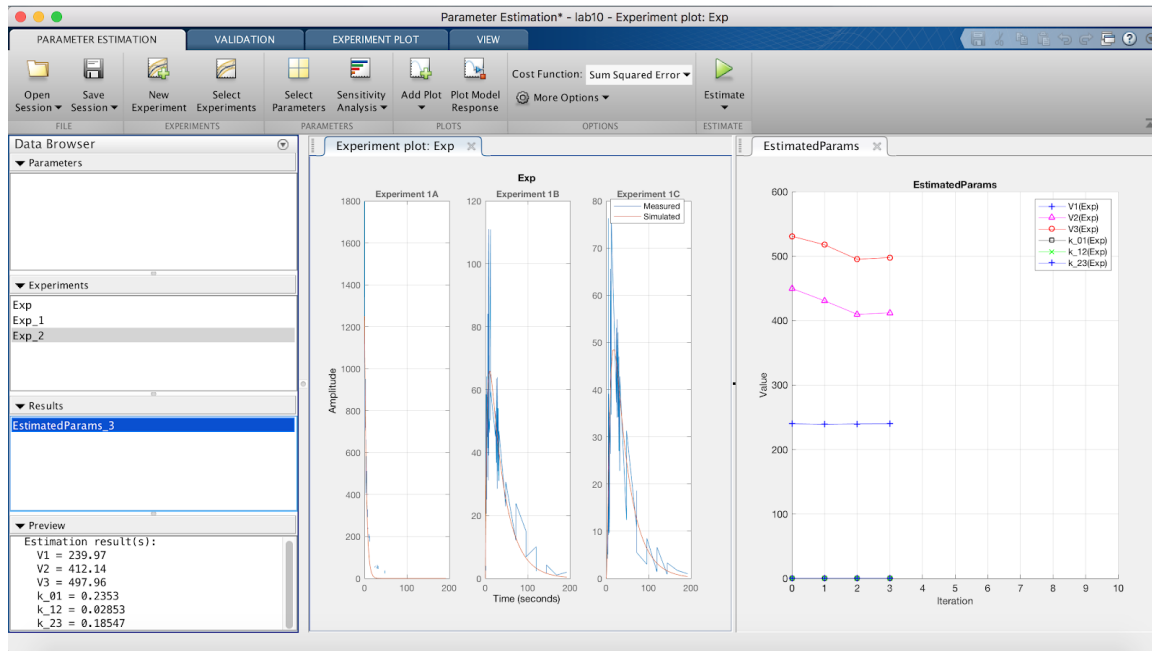
Name : Sum Yi Li

Student ID : 505146702

I completed this written part of the homework, lab report, or exam entirely on my own.

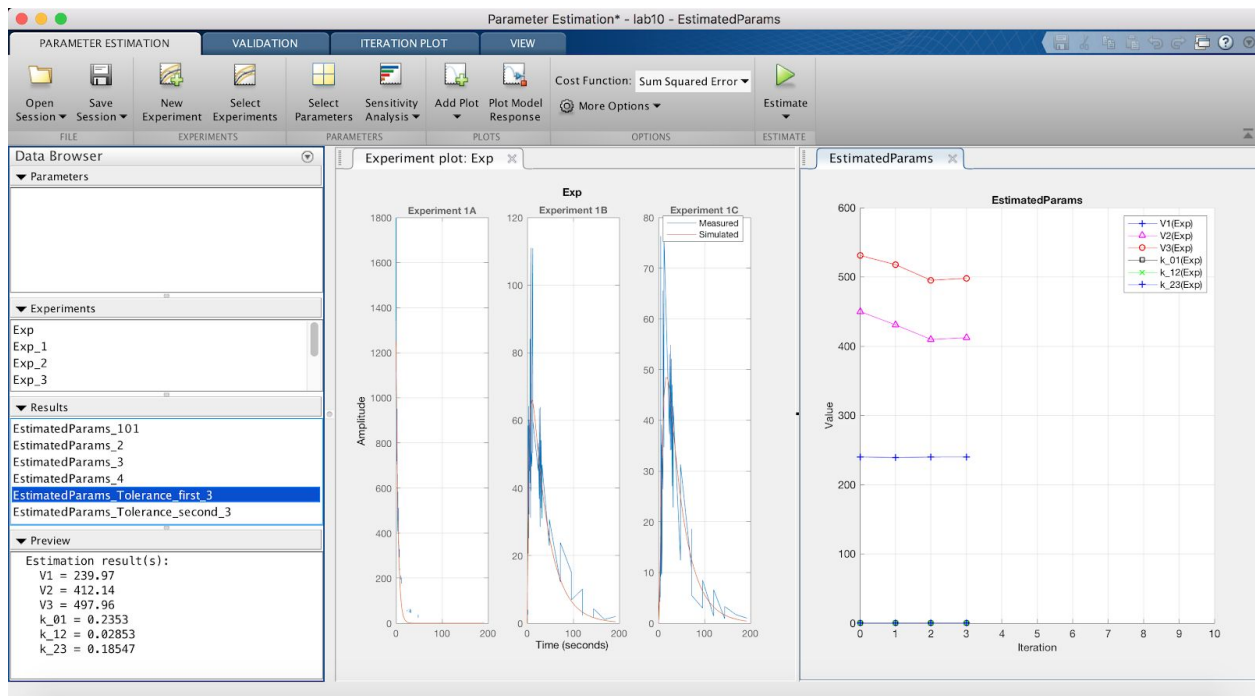
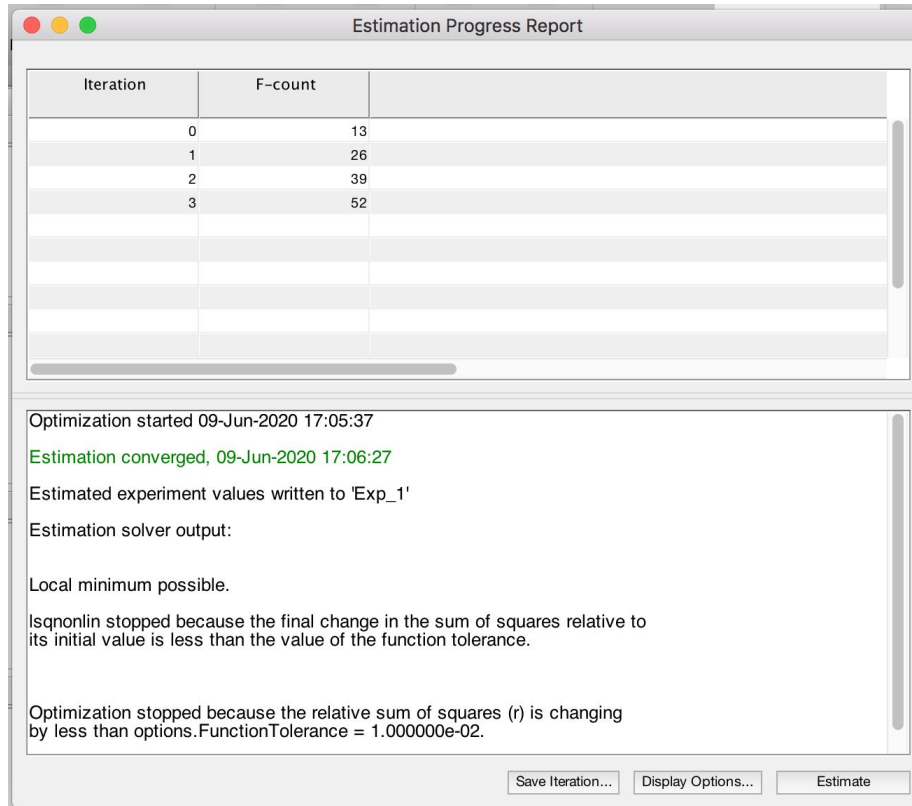
A handwritten signature in blue ink, appearing to read 'Sum Yi Li'.

Problem 2 (a)

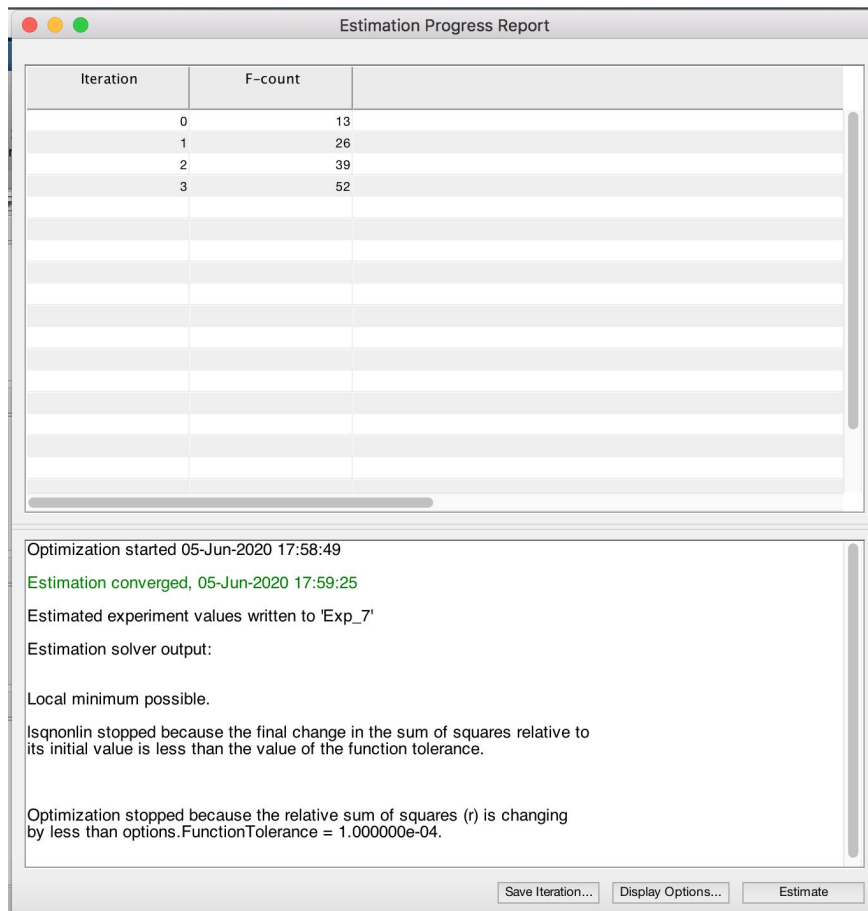
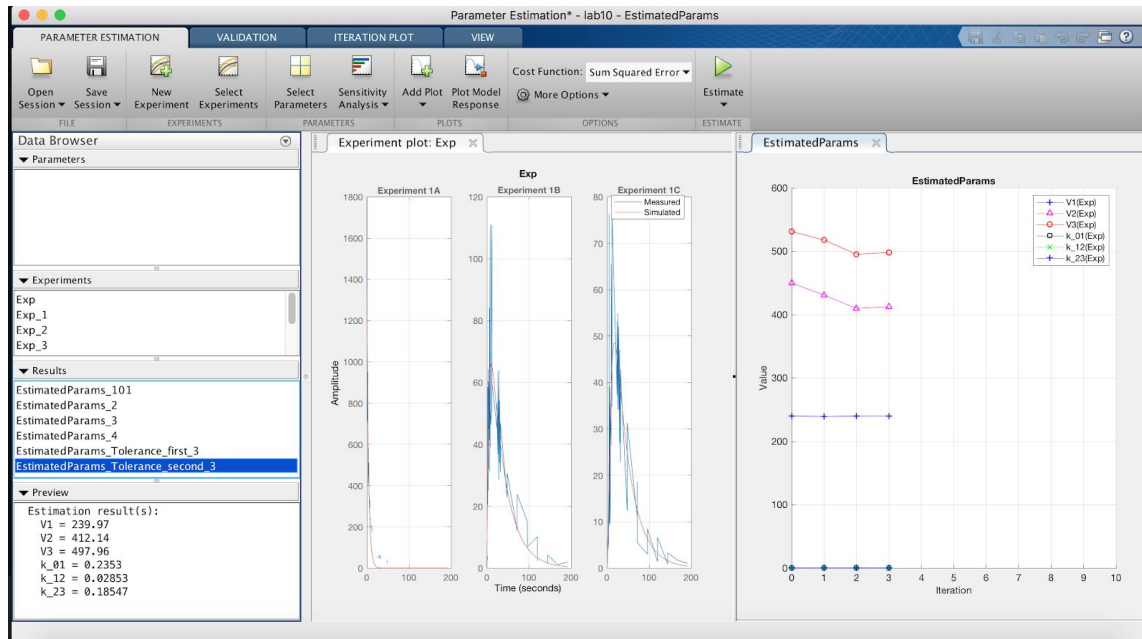


Problem 2 (b)

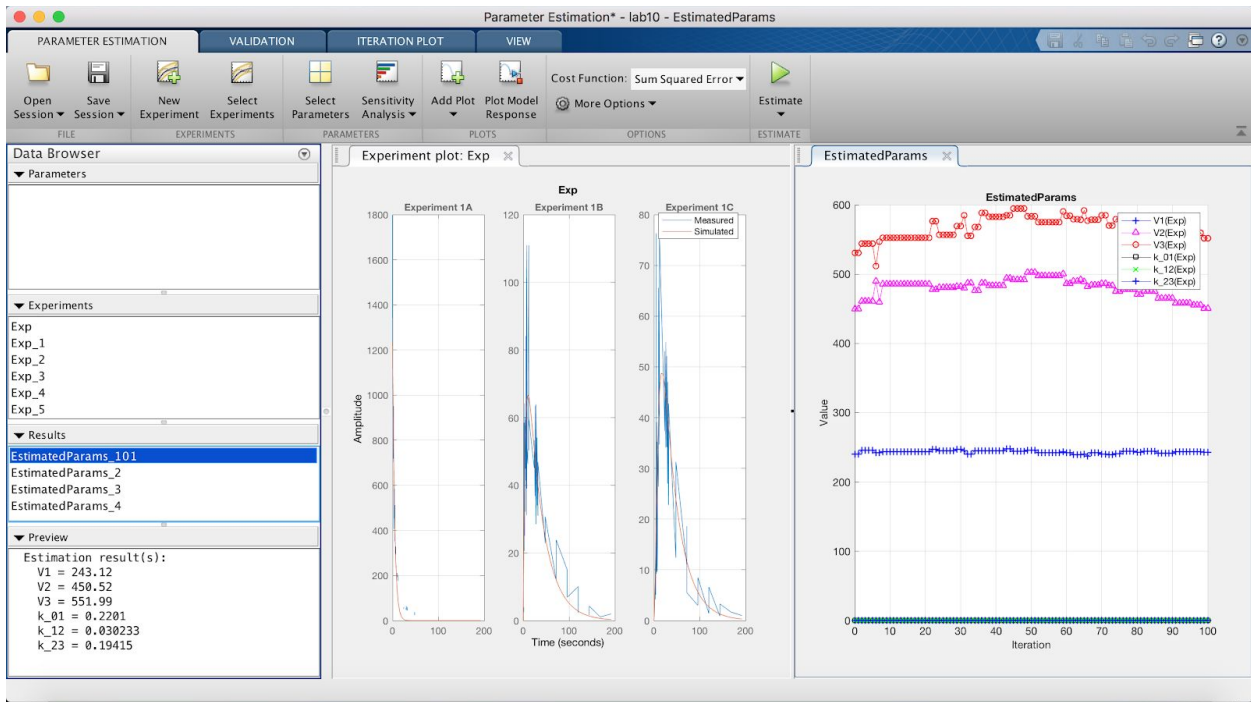
Function Tolerance : increase by one order magnitude (default: 0.001, new: 0.01)



Function Tolerance : decrease by one order magnitude (default: 0.001, new: 0.0001)



Problem 2 (c)



| Estimation Progress Report | | |
|----------------------------|---------|--|
| Iteration | F-count | |
| 0 | 1 | |
| 0 | 1 | |
| 1 | 7 | |
| 2 | 9 | |
| 3 | 10 | |
| 4 | 11 | |
| 5 | 12 | |
| 6 | 14 | |
| 7 | 16 | |
| 8 | 18 | |
| 9 | 19 | |
| 10 | 20 | |
| 11 | 21 | |
| 12 | 23 | |
| 13 | 24 | |
| 14 | 26 | |
| 15 | 27 | |
| 16 | 28 | |
| 17 | 30 | |
| 18 | 30 | |

Optimization started 05-Jun-2020 17:24:37

The design optimization problem specifies multiple objectives for minimization but the 'fminsearch' solver does not support multi-objective optimization. The solver will minimize the sum of the objectives.

Phase two: Minimizing objective...

Estimation failed to converge, 05-Jun-2020 17:29:43

Estimated experiment values written to 'Exp_5'

Estimation solver output:

Exiting: Maximum number of iterations has been exceeded
- increase MaxIter option.
Current function value: 2.991649

Save Iteration... Display Options... Estimate

Problem 2 part (d)

When the model is using nonlinear Least squares (nonlinear in the parameters) and the Levenberg-Marquart search algorithm, it takes 50 seconds to converge.

When the model is using the Levenberg-Marquart search algorithm and the same setup with the default function tolerance increasing by one order of magnitude, it takes 33 seconds to converge.

When the model is using the Levenberg-Marquart search algorithm and the same setup with the default function tolerance decreasing by one order of magnitude, it takes 36 seconds to converge.

When the model is using a simplex algorithm with the original function tolerance, it does not converge after 100 iterations.

If the algorithm does not converge, I could perform more iterations and adjust the tolerance level (either increase or decrease from the default value of the error tolerance) in order to trial and error to test out the correct parameters values and plots to make the algorithm to converge.