Table of Contents

clear

```
clear;
close all;
fclose all;
```

prepare data

```
randn('seed', 1);
beta = zeros(10, 1);
beta(3) = 1;
beta(5) = 7;
beta(10) = 3;
n = 100;
p = 10;
X = randn(n, p);
y = X * beta + 0.1 * randn(n, 1);
lambda = 0.2;
```

solve

```
[beta,status,history] = gauss_seidel_versus_jacobi(X, y, lambda);
[beta2,status2,history2] = jacobi(X, y, lambda);
```

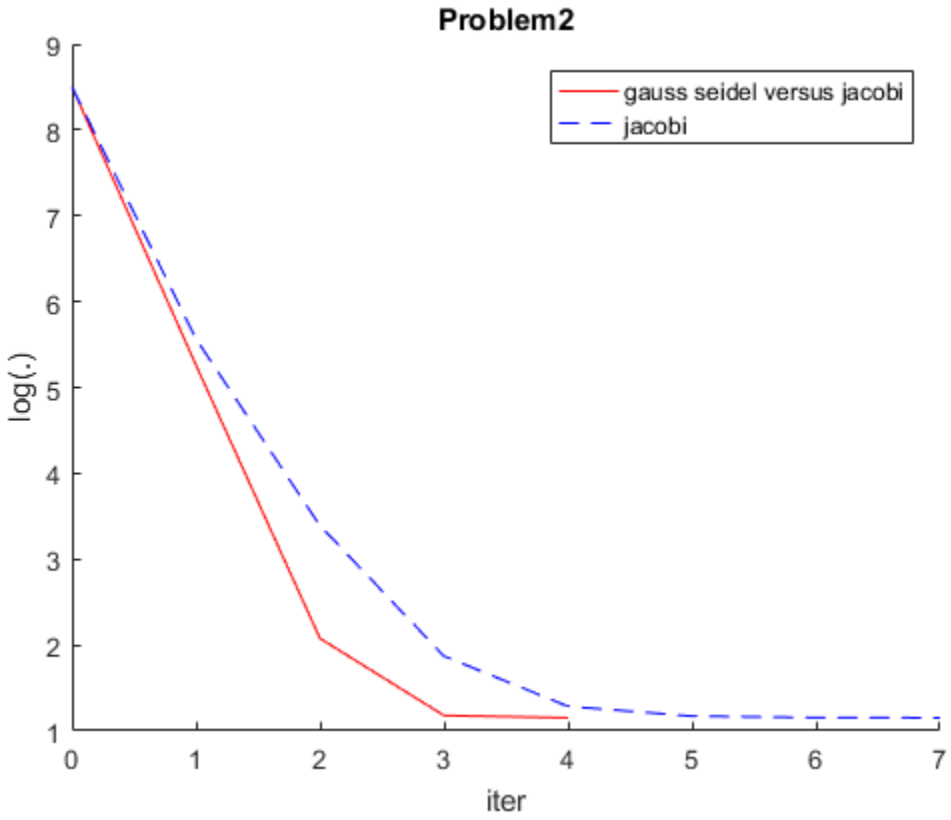
```
Solving a problem of size (n=100, p=10), with lambda=2.00000e-01
-------------------------------------------------------------------------
 iter       obj      reltot
   0     4.92e+03             NaN
   1  1.92467e+02     2.45613e+01
   2  7.97997e+00     2.31188e+01
   3  3.25100e+00     1.45462e+00
   4  3.16626e+00     2.67634e-02
   5  3.16502e+00     3.92681e-04

Solving a problem of size (n=100, p=10), with lambda=2.00000e-01
-------------------------------------------------------------------------
 iter       obj      reltot
   0     4.92e+03             NaN
   1  2.61360e+02     1.78235e+01
   2  2.96660e+01     7.81008e+00
   3  6.48962e+00     3.57130e+00
```

```
    4   3.61640e+00     7.94498e-01
    5   3.22795e+00     1.20340e-01
    6   3.17345e+00     1.71748e-02
    7   3.16612e+00     2.31319e-03
    8   3.16518e+00     2.96959e-04
```

show figures

```
hold on;
figure(1);
title('Problem2');
xlabel('iter');
ylabel('log(.)');
plot(history(:, 1), log(history(:, 2)), 'r-');
plot(history2(:, 1), log(history2(:, 2)), 'b--');
legend('gauss seidel versus jacobi', 'jacobi')
hold off;
```



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