Peer Review for Aaron Webb

General Comment:

I went through your 1st week work (ex1.py & ex2.py) on your GitHub account. I like the modularity in your code. All functions are well written and the whole structure is an assembly of small modules performing very specific functions which provided a better understanding while reviewing the code. Your codes are also very well commented.

One suggestion that I would like to provide is about the function you have written to time the inversion routines. The function is highly intertwined with the structure of the inversion routines and is a little less general as compared to the rest of your code that provides a great amount of flexibility between modules. Writing a function that stores the last time stamp and prints the difference between the current time stamp and the last time stamp and then updates the stored time stamp might be another way of doing it. You can also use a Boolean input to the function if you don't want it to print the time difference every time.

Although I found your codes, I couldn't find the derivations on your GitHub Page.

Code review:

In your code, you start by defining and comparing solvers that are based on

1. Inversion method
2. Decomposition method
3. Sparse Solver

Using varying levels of sparsity.

Your results are insightful and intuitive with the sparse solver outperforming the rest of the two.

One interesting observation was that the inversion solver outperformed the decomposition solver.

One ambiguity that I observed in the ex1.py was:

```
X = np.random.random((n, p))
Y = np.random.random(n)
W = np.random.random((n,n))
```

You have initialized the weight matrix as an *n x n* random matrix where as in my understanding it is to be a diagonal matrix.

Pseudo Code for Suggested Timing function:

```
Def timer(print ):
    present = time.time()
    If print == True:
        Print(present – past)
    past = present
```

I really enjoyed reviewing your work and it also provided me with interesting insights for my own work. Hope you find this review helpful.