Timeline

1. **Finish with simulations** ✓ *04.15.15*
   Due: 04.09.15 - Completed **PAST THE DUE DATE**

   - As of 04.01.15 I think I'm done with these... The best method has been figured out and it's just doing it via the circle
   - As per meeting with Brian on 04.02.15 I should look into this a bit more – not only should I look at the RMS data, but also the line profiles of them, as this may provide some interesting information about how well each one is doing
     - Brian noted this because the RMS has a tendency to strongly prefer the DC data, so the circle filter may be the most "DC" similar to the fully sampled data.

   This is classified as finished as of 04.15.15

2. **Figure out parameterization choices for CS**
   Due: TBA - Reason is that Parameters can be chosen on the fly

   - *The due date for this has been pushed forward because Brian isn't sure if it will be required. Notes will be made at a future time*
   - Understand what each parameter does fully
   - Figure out why I'm getting poor results on the CS
   - Likely a good idea to go through the math again – figure out what is happening in the CS code
   - Spend a day or two porting?
   - Reading MINC files in would be easier
   - More understanding around the lab on how it works
   - However, I'm not as proficient in python...

3. **Simulation for Random undersampling method** *Due: 05.06.15*

   - The purpose of this is to see how well we can reconstruct an image based on a solid angle of data
   - Brian stated that we will need to be proficient in how we do this and a lot of thought will need to go into it.
   - Can be used **with a CS Recon!**

4. **Look at different methods of adding in the extra term in the reconstruction**
   Due: 05.06.15
   This needs to be completed after the CS is working properly

   - Is there anything that can be done to make the reconstruction have this extra term easily?
   - Ideas for forms:
     - $\lambda_3 ||m_j - m_k||_2 (\vec{d_j} \cdot \vec{d_k})^2$

$$- \ \mathrm{e}^{\frac{-\alpha_{ij}^2}{2\sigma^2}}$$

5. **Massage in 3D reconstructions**
   Due: Later...

   - *Brian stated this should be a final step*
   - Analyze the 3D wavelet work that can be done in MATLAB
   - Need to understand how the p2DFT and XFM classes work in Lustig's code in order to adapt them to work in 3D
   - Run reconstructions on full data that has been undersampled
   - Keep in mind that the undersampling doesn't occur in the readout direction