



# CSCI 8360: Neuron Finding

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## Team Lovelace

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We believe that our group was named after – Ada  
**Lovelace (1815-1852)**

- She was an English mathematician , who was first to recognize the power of computing machine and considered one of the first computer programmers.



# Techniques Implemented

## ► Unets

Our unets implementation was not complete due to “Mask to regions” issue. We tried some methods, but they missed many regions in even the masks generated from training regions.

## ► NMF

- Non negative matrix factorization is a technique we all know is unusually good at this problem.

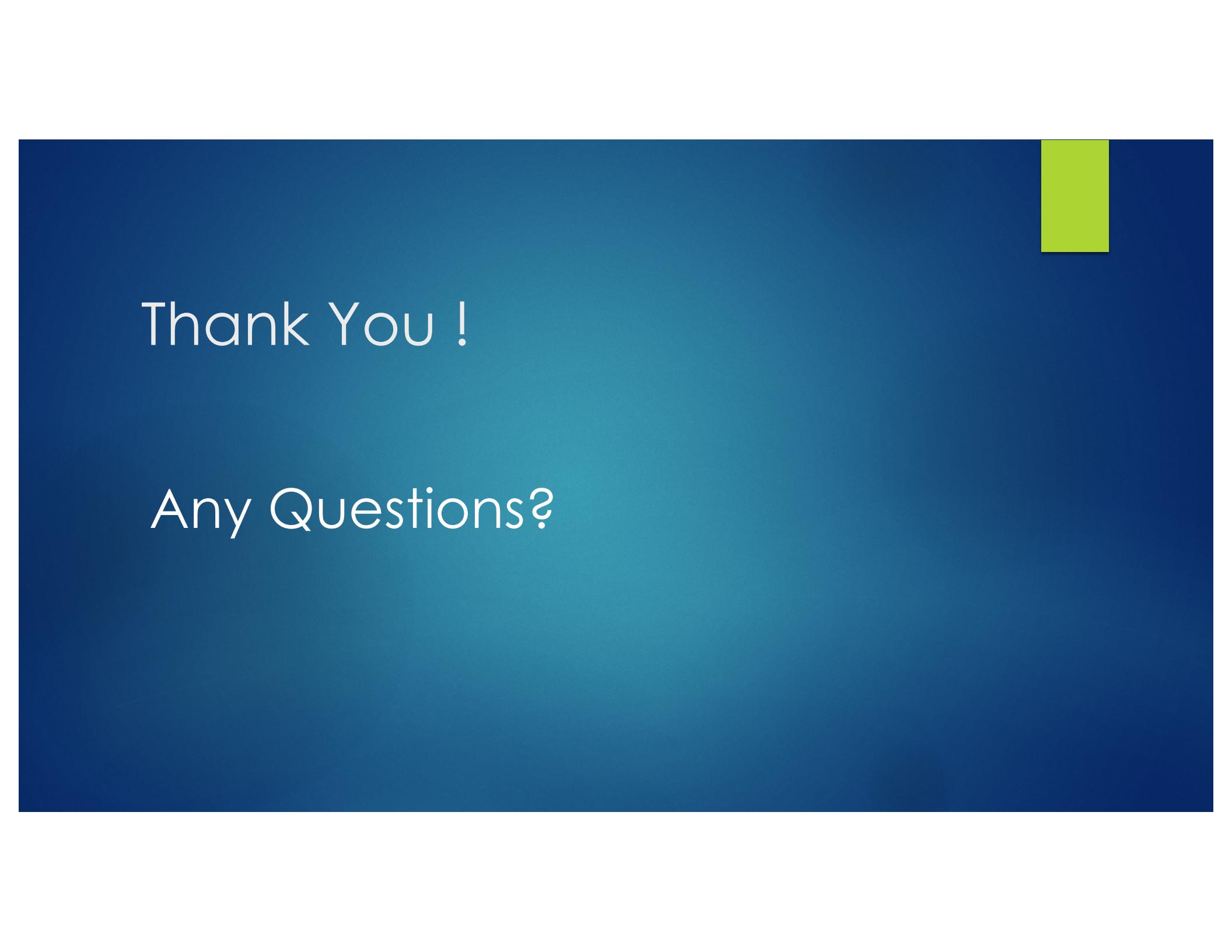
# Experiments with NMF

Dataset	Chunk size	overlap	k	Max_iterations	Percentile	Accuracy	Precision	Recall	Inclusion	Exclusion	Padding	coords
neurofinder_02.00	100*100	0.1	5	50	99	3.44819	0.96262	1	0.69004	0.79553	no	63,33
neurofinder_02.00	100*100	0.1	3	50	99	3.2	1	0.70874	0.65844	0.80645	no	18,...
neurofinder_02.00	100*100	0.1	7	50	99	3.3	0.8	1	0.7	0.8		
neurofinder_00.01	100*100	0.1	3	50	95	2.5	1	0.16993	0.61802	0.75209		
	50*50	0.1	5	30	95	3.1						
	60*60	0.1	3	30	95	3.2						
	70*70	0.1	3	50	95	2.7						
neurofinder_00.00	70*70	0.1	3	50	95	2.7						
	50*50	0.1	10	50	95	3						43,48
	60*60	0.1	10	50	95	3 better						32,54
	65*65	0.1	10	50	95	3 better(2.97229)	1	0.69053	0.78521	0.49655		37,43
neurofinder_01.00	50*50	0.1	10	50	95	3.12394	0.733	1	0.5316	0.85934		0,0
	50*50	0.1	10	20	95	3.14115	0.75815	1	0.52593	0.85707		
	100*100	0.1	5	50	99	2.6						
						3.13863						
neurofinder_01.01	50*50	0.1	5	50	95	3.29171	0.84177	1	0.56026	0.88968		
neurofinder_02.01	50*50	0.1	5	50	95	2.67902						
	70*70	0.1	5	50	95	2.71039						
	100*100	0.1	5	50	99	3.3						

The final parameters with which we got maximum accuracy are listed below for each test file.

Dataset	Chunk_size	k	max_iteration	Percentile	Accuracy
neurofinder00.00	50*50	10	50	95	3
neurofinder00.01	60*60	3	30	95	3.2
neurofinder01.00	50*50	10	20	95	3.14115
neurofinder01.01	50*50	5	50	95	3.29171
neurofinder02.00	100*100	5	50	99	3.44819
neurofinder02.01	100*100	5	50	99	3.3
neurofinder03.00	100*100	10	50	95	2.91006
neurofinder04.00	100*100	5	50	95	2.96528
neurofinder04.01	100*100	5	30	95	3.331

- Overall Accuracy  3.16947
- Avg Precision: 0.89772
- Avg Recall: 0.92168
- Avg Inclusion: 0.66563
- Avg Exclusion: 0.68444



Thank You !

Any Questions?