Thursday 10pm - 11:30pm

* Goal: Read the slides from weeks 3 and 4 to recall dynamic programming approach to sequence alignment; read textbook section on linear space alignment
* Progress: Familiarized myself with how linear space global alignment works and started writing the function to find the middle node

Friday 4pm - 5pm

* Goal: Finish writing the middle node function
* Progress: Wrote the middle node function but something was off -- we were trying to compute the score matrix and find the middle node in one function

Sunday 1pm - 2:30pm

* Goal: Figure out what was wrong with the way we were computing middle node
* Progress: Not much, went around in circles trying to figure out what was wrong

Sunday 6pm - 7:30pm

* Goal: Get middle node function to work (and possibly middle edge?)
* Progress: Realized that we need a function to compute the score matrix in linear space ("GlobalScore"); rote that function which made finding the middle node really easy; also figured out how to find the middle edge (storing a column of backtracking pointers when running the GlobalScore function in reverse)

Monday 12:30pm - 1:30pm

* Goal: Write the recursive LinearSpaceAlignment function
* Progress: Wrote half of it then got stuck; need to visit office hours

Monday 3:15pm - 3:45pm

* Goal: Visit office hours for help with the recursive function
* Progress: Got the recursive function working but it was outputting the wrong answer -- something was wrong

Monday 9:15pm - 9:45pm

* Goal: Figure out what was wrong with LinearSpaceAlignment
* Progress: Figured out the bug (slightly off indexing)

Monday 9:45pm - 11:45pm

* Goal: Adapt the linear space global alignment program to do linear space local alignment
* Progress: Wrote the necessary functions for local alignment and everything seemed to be working

Wednesday 7 - 9pm

* Goal: Clean up code and comment it appropriately and then move on to using the program we wrote to locally align the human and mouse titin protein
* Progress: Realized that our linear space local alignment was actually \*not\* working correctly; traced the error back to the global alignment functions and spent the next two hours debugging; found one error -- we were using a self-written maxind function but initializing it to 0 instead of -inf

Thursday 11am - 12pm

* Goal: Visit office hours to get help debugging
* Progress: Professor Linderman pointed out a typo -- instead of using the col index in our recursive global alignment function, we were using the row index

Thursday 3 - 4pm

* Goal: Debug global alignment code
* Progress: Spent time retracing the recursive alignment function but all seemed okay; resolved to going to office hours again

Thursday 5 - 5:45pm

* Goal: Visit office hours to get help debugging; check if the code for linear space local alignment was working fine by using the quadratic global alignment function
* Progress: Went over code with professor once again; professor said he would check offline; used quadratic space global alignment to ensure that the rest of the code for linear space local alignment was working fine

Friday 5:30 - 6:15pm

* Goal: Figure out how to optimize code by compiling some of the code to C using Cython
* Progress: Read the instructions in the discussion post on canvas but were unable to follow them to successfully compile to C.; agreed to not do this optimization and just wait longer for the program to run solely in python

Saturday 10am - 11am

* Goal: Clean code and comment it; download and format the human and mouse titin proteins
* Progress: Cleaned and commented code; downloaded and formatted the human and mouse titin proteins appropriately

Saturday 11am - 12pm

* Goal: Figure out what scoring matrix to use and what indel penalty to use
* Progress: Read the ncbi article professor sent us; decided to use the "shallow" vtml20 matrix and to use an indel penalty of 15. Searched the internet for vtml20 matrix, found one, scraped it, formatted it appropriately

Saturday 6pm - 7pm

* Goal: Convert the vtml20 matrix to a dictionary (vs dataframe that I used earlier -- the dataframe lookup was too slow); start aligning the human and mouse proteins
* Progress: Successfully accomplished the goal; also declared the vtml20 dictionary as a constant within the file (vs importing it) and that reduced the runtime significantly; alignment program is now running

Sunday 3pm - 6pm

* Goal: Get the poster ready
* Progress: Finished the poster