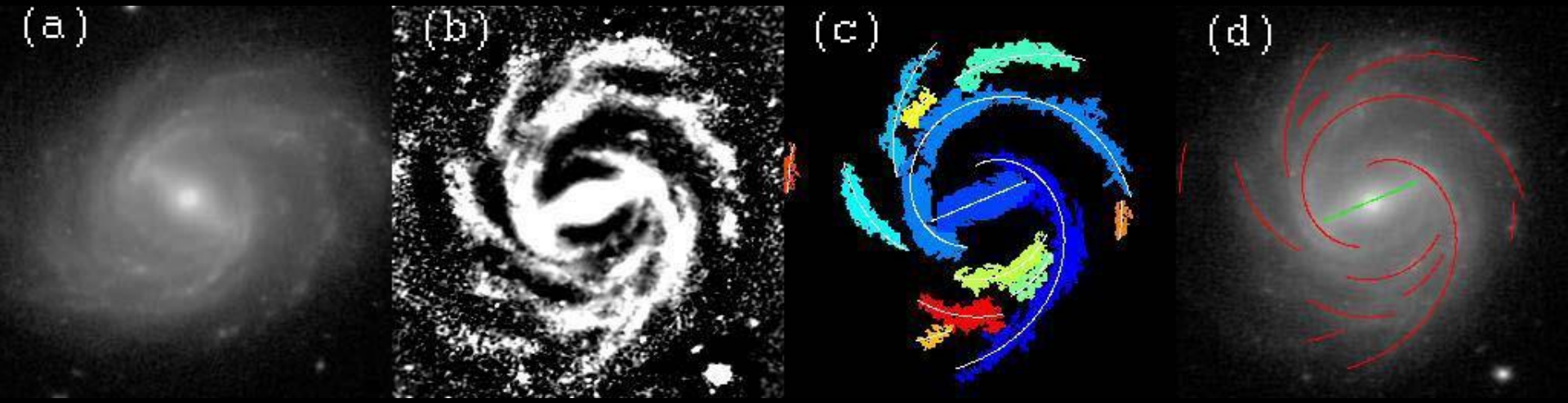
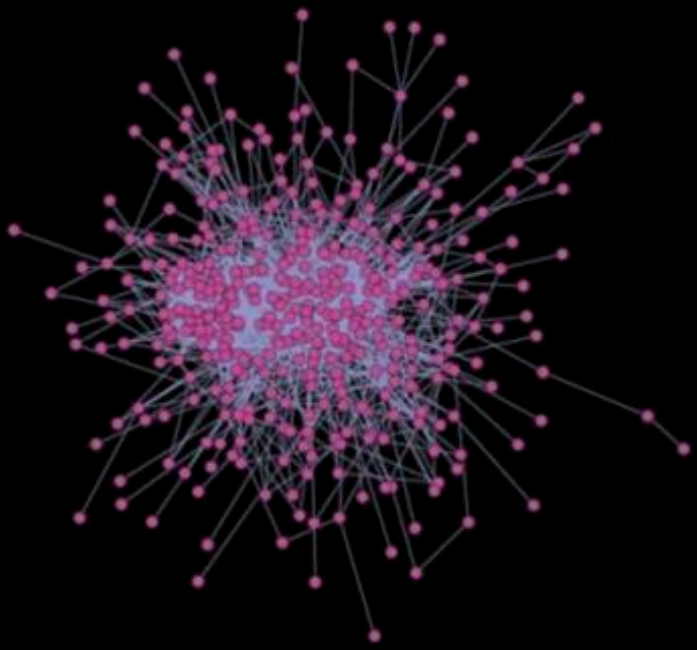
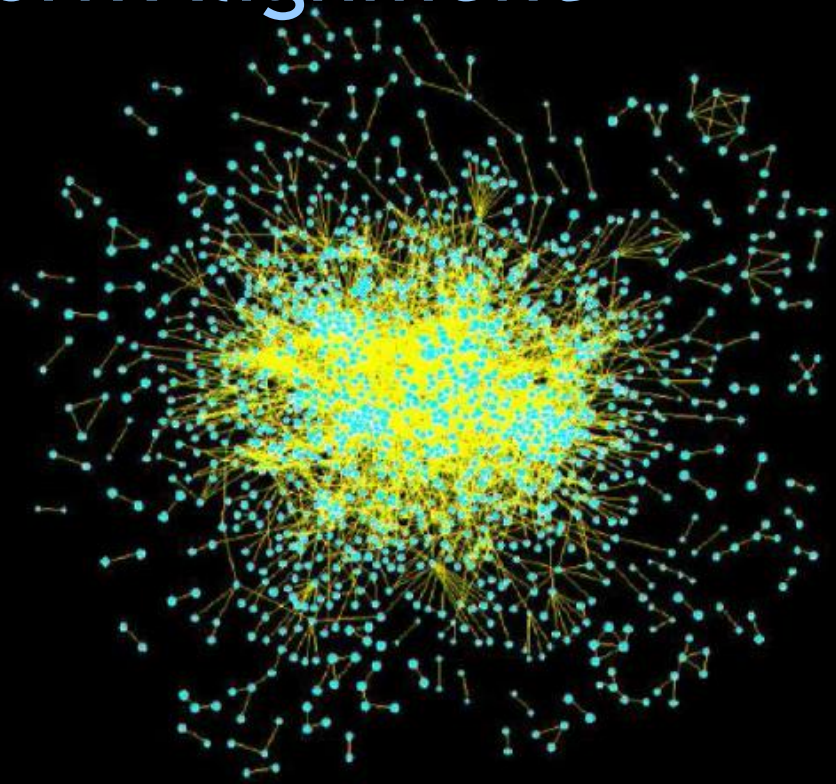
ASTRONOMY: automatically finding arms in spiral galaxies



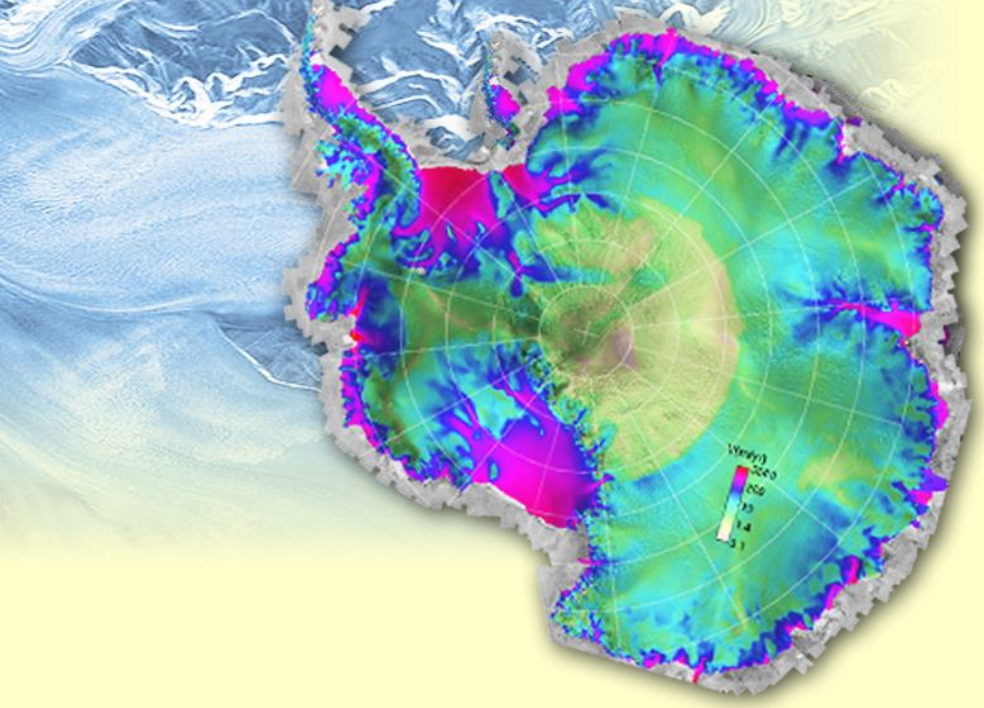
-We already have the algorithm
-Now we need to apply it to large sets of galaxies and analyze the results
-Possible projects include:
    -Running the code on an existing database of 1M galaxies
    -Studying results to see if/when/how it went wrong
    -Finding new galaxies in *Hubble Space Telescope* images
    -Etc……. There is TONS of real science to do here!
-Astronomy knowledge helpful, but not necessary

Biological Network Alignment





- Lots of biology has bees learned from comparing gene *sequences*
- We do the same for *networks*, which is much harder
- We have network alignment algorithms, we need to compare them
- And run them on a large database of networks
- Knowledge of biology helpful, but not necessary



GLOBAL WARMING and SEA LEVEL RISE

-Working with NASA/JPL
-The Antarctic is melting
-How will sea level rise over the next 100 years?

Projects include:
-Front-end visualization tools in Python or other languages
-Phone app for simplified simulation, for educating the masses
-More mathematical topics related to actual simulation
-Data assimilation: comparing the model to observations
-Physics / math knowledge helpful but not necessary

For all projects, contact Prof. Wayne Hayes at whayes@uci.edu
You'll need to sign up for at least 2 credits in CompSci 199 (or equivalent honors version), which means you're promising to spend at least 6 hours/week on the project.