Project APC 524

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1 Task description

This project is about to improve some image analyzing codes and their performance related to a study on drosophila embryo conducted by one of our group members Ping Wu. She uses some fluorescently labeled proteins to investigate certain biological features during the period by which the drosophila embryo forms and develops. Before making any biological analysis, she requires to track the relative locations of the labeled proteins inside the body of drosophila among a sequence of snapshots taken from these consistently moving creatures during their embryogenesis procedure.

Given the above background information, we would like to achieve two objectives in this project. The first one is to create an interface adapted to her existing codes in order to facilitate the future development in her own research. The second objective tends to incorporate parallel programming techniques in the above images processing step for location detection. If we have spare time, a potential improvement could be made on automatically centralizing the target object, here the whole shape of drosophila, by rotation or displacement in a sequence of images before the location detection step.

2 Schedule

In total 8 weeks.

- Nov 18 (Sun) – Nov 24 (Sat) (Thanksgiving week):

  Discuss the project with Gabe. Question: what should be included in the prototype? To which extend should we do parallelization? How to represent profiling checking?

  Read reference papers of Ping's project.

  Understand properly the existence code structure. (potentially 1 extra meeting) Clarification of all relationships between existing functions and their input/output.

  List one or two potential requires in the future development.(Ping)

  First version of the prototype. (Graphical + coding)

- Nov 25 (Sun) – Dec 1 (Sat) :
  Second version of the prototype.
  Familiar with parallel programming.
  Familiar with location detection techniques in the existing codes.(To be done)
- Dec 2 (Sun) – Dec 8 (Sat):
  prepare for presenting the prototype in course. (third version)
  alpha version of parallelization.
- Dec 9 (Sat) – Dec 15 (Sat):
  Improve parallelization.
- Dec 16 (Sun) – Dec 22 (Sat) [Winter Break]:
- Dec 23 (Sun) – Dec 29 (Sat) [Winter Break]:
- Dec 30 (Sun) – Jan 5 (Sat) [Winter Break]:
- Jan 6 (Sun) – Jan 12 (Sat):

References