

## Mid-Year Update

### **What is done**

As of now, the Galapagos framework is running nearly flawlessly. All of the designed operators for the framework have been implemented, unit-tested, and integration-tested. I have also started the documentation and the tutorials for teaching students in a laboratory setting. The current toy examples are (1) IntGenome: a simple integer optimization problem (done two different ways), (2) SineGenome: a continuous optimization function, and (3) Diophantine: a solver to a given Diophantine equation.

### **What is almost done**

The “runner” for the framework is currently under development and I hope to finish it by the end of Christmas Break. This particular aspect of the project is an extension of the programming framework to make the labs easier for students. Initially, the student can use one of the given examples (like IntGenome) and modify the XML file to see how different operators function. For the first project, the student would only (1) write a fitness function, (2) write a factory to create their genome, and (3) specify their operators and various parameters in an intuitively written XML file. The “runner” would take the XML file and convert it into JavaBeans, which would then be the input to the framework. Later projects would include adding operators to the framework, customizing the report mechanism, etc.

*Note: much development has been done since the last CVS commit, so within the next few days, expect massive changes to the code on Sourceforge.*

### **What needs to be done**

Once the runner is finished, the first priority is documentation and tutorials. The overall structure of this part of the project is already planned out, but most of it simply needs to be filled in. After the documentation is finished, I will tackle objectives at once: (1) test these tutorials on one or two experienced Java programmers and interview them thoroughly, and (2) begin writing a more involved report mechanism (perhaps one that generates an HTML output).

## **The Mock Laboratory**

Once both of those are finished, I will put together a “mock lab”, where I will ask any student capable of Java programming to come for an afternoon and do this lab. I will give a 20-30 minute lecture on the background of Genetic Algorithms, then set them loose on the lab work. The idea would be that they have a significant Genetic Algorithm running by the end of the afternoon (about an hour and a half’s time).

## **Schedule**

January 3<sup>rd</sup>, 2006: The runner done.

February 1<sup>st</sup>, 2006: Tutorials done and documentation done.

February 31<sup>st</sup>, 2006: Have a one or two advanced students (perhaps a professor or two) try the lab. Do interviews and make adjustments.

Mid-March, 2006: Do the mock lab.

April 2006: Write final report and SIGCSE paper on findings.

*More information can be found at the project’s website:*

<http://www.andymeneely.com/Prog/GA/galapagos/>