PyBike

Presentation - v_1.0

https://bitbucket.org/mshokrof/pybike
Participants

Mostafa Shokrof - Computer Science

Pablo Echevarria - Computer Science

Hossein Ghorbanfekr Kalashami - Physics

Vinicius de Godoi Contessoto - Biophysics
Problem

Bike

Particles-Wheels connected by springs

+ Genetics Algorithms
Project Details

OO design:

- Classes:
  - Particles: Points and Wheels
  - Forces: Collision, Spring and Gravitational
  - Physics: know how to move particles
  - Scenery: contains ground definition and is the responsible to start the action
  - Graphics
What we used

- hg, central server bitbucket.org
- python 2.7
  - matplotlib
  - unittest
  - numpy
  - sphinx
  - umbrella
Development Troubles

- Communication: We must correct the same bug twice or more
- Merging problems
- Lot of work was needed to make Graphics class
- At the beginning, started using unittest but next give up
- Numerical precision
- Dealing with the time limit
Developing strategy

The group was split in two:
- Model the physics (Verlet algorithm)
- Model the problem (wheel, graphics, etc)

Next step:
- Join together
- Once the bike worked, we focus on more complex ground and in GA
- Implementing GA as independent package + unittest
Modeling Physics

Implementing Graphics Module

Modeling the Problem

Implementing Genetic Algorithm

Handling Complex Ground

integrating

integrating

Tuning GA Parameters

integrating
Developing problems

Two groups:

- More complex ground
- Debugging, tuning constants for more realistic bike
- The code was merged but doesn’t seem work properly :(

Developing problems

HG Saved us
We could rollback

:)
* Complete testing (unittest, integration)
* Profiling
* GA
* Complete Documentation
* Tutorials