

4th Workshop on Advanced Techniques
for Scientific Programming and Management of Open source Software Packages
7 – 18 March 2016, Miramare, Trieste, Italy

The Genetic Bike

Supervising: David Grellscheid (UK)

Group 3

Kevin Speyer (Argentina)

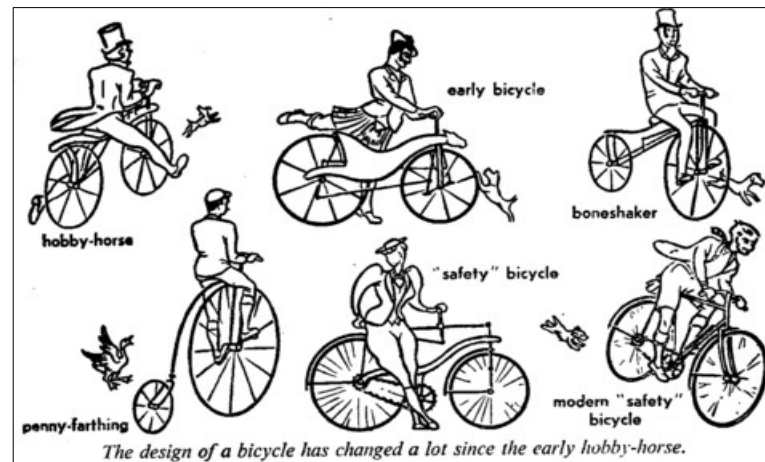
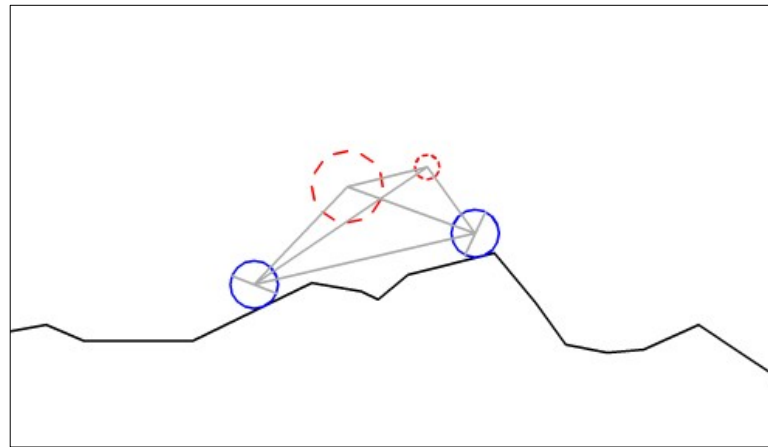
Firouzian Amir Hossein (Iran)

Faraji Nafchi Somayeh (Iran)

Tatiana Russkova (Russia)

Objective

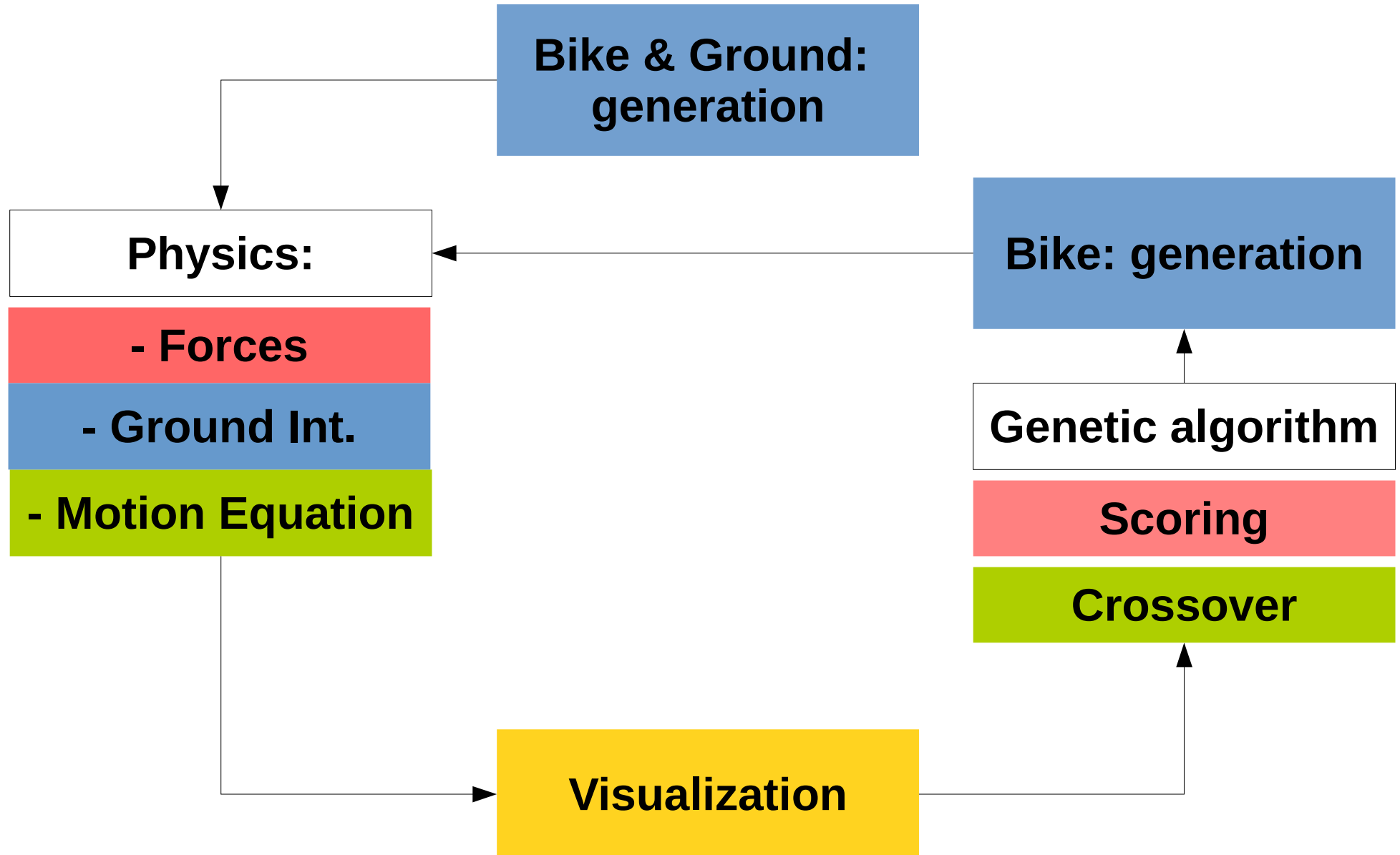
Create a simulation in Python to evolve an optimal bicycle frame



Main sub-tasks

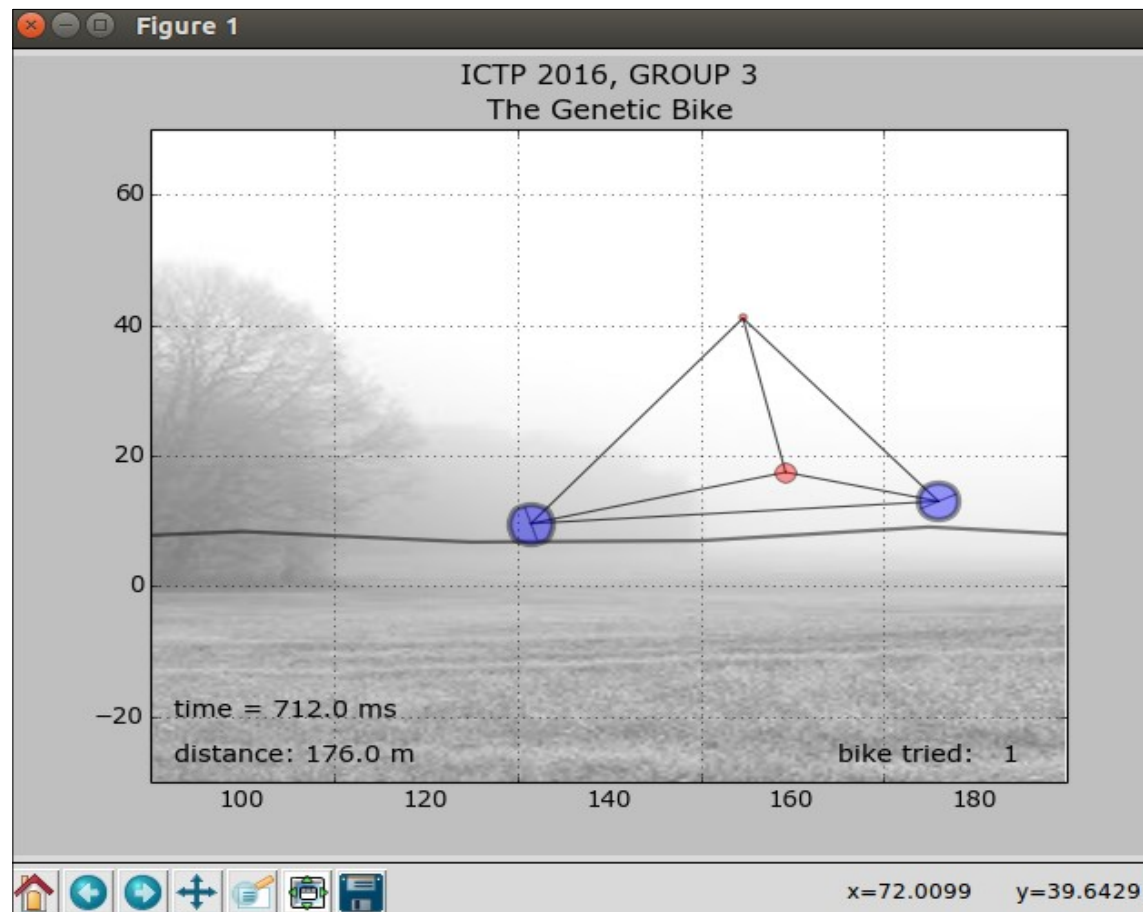
1. Generation of initial bike's population
2. Physical model of simple bike and ground
3. Implementation of genetic algorithm
4. Visualization of simulation
5. Managing the development tasks

Program design



Visualization

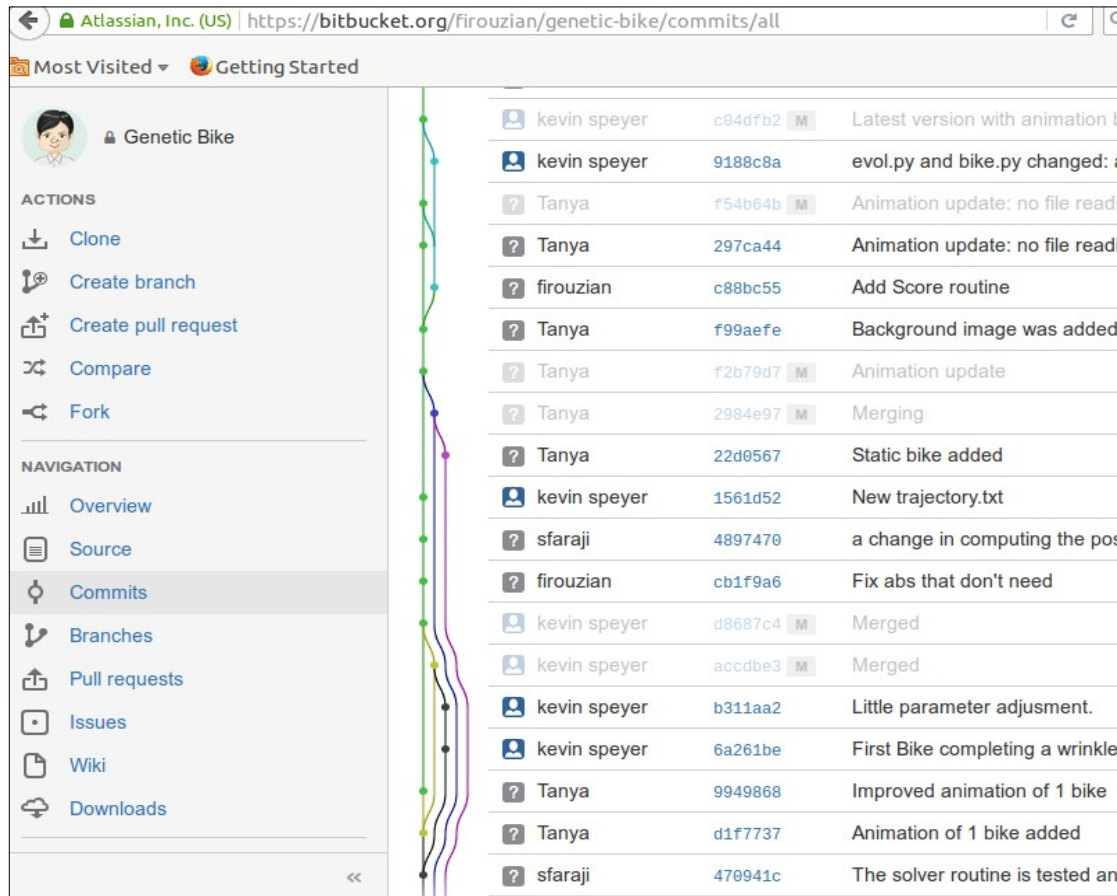
- class `Render(object)`: draw bike motion, frame by frame
- Matplotlib plotting library was used



Tools to share information

Trello board

Bitbucket & Mercurial



Atlassian, Inc. (US) | <https://bitbucket.org/firouzian/genetic-bike/commits/all>

Most Visited ▾ Getting Started

Genetic Bike

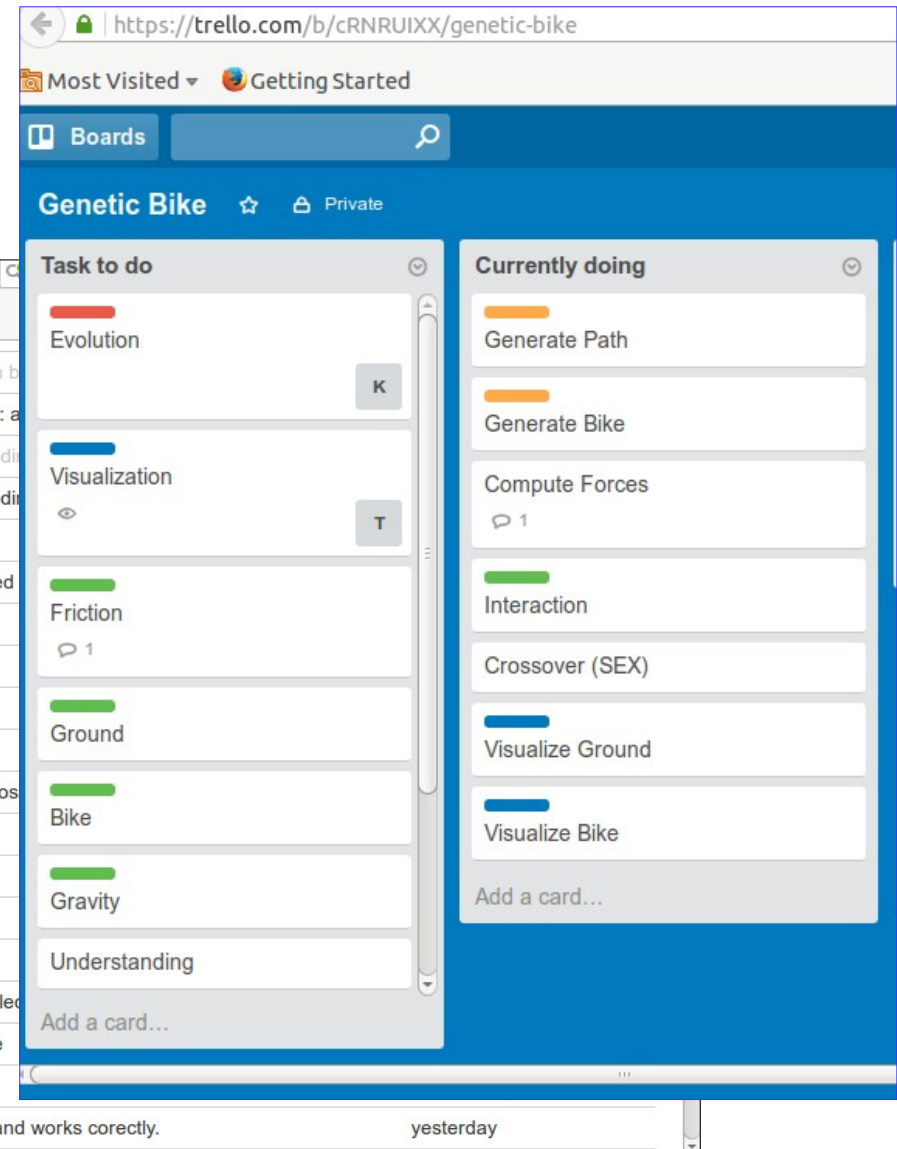
ACTIONS

- Clone
- Create branch
- Create pull request
- Compare
- Fork

NAVIGATION

- Overview
- Source
- Commits
- Branches
- Pull requests
- Issues
- Wiki
- Downloads

Author	Commit ID	Message
kevin speyer	c84dfb2	Latest version with animation b
kevin speyer	9188c8a	evol.py and bike.py changed: a
Tanya	f54b64b	Animation update: no file readi
Tanya	297ca44	Animation update: no file readi
firouzian	c88bc55	Add Score routine
Tanya	f99aefe	Background image was added
Tanya	f2b79d7	Animation update
Tanya	2984e97	Merging
Tanya	22d0567	Static bike added
kevin speyer	1561d52	New trajectory.txt
sfaraji	4897470	a change in computing the pos
firouzian	cb1f9a6	Fix abs that don't need
kevin speyer	d8687c4	Merged
kevin speyer	accdb3	Merged
kevin speyer	b311aa2	Little parameter adjusment.
kevin speyer	6a261be	First Bike completing a wrinkled
Tanya	9949868	Improved animation of 1 bike
Tanya	d1f7737	Animation of 1 bike added
sfaraji	470941c	The solver routine is tested and works corectly.



<https://trello.com/b/cRNRUIXX/genetic-bike>

Most Visited ▾ Getting Started

Boards

Genetic Bike ☆ Private

Task to do

- Evolution
- Visualization
- Friction
- Ground
- Bike
- Gravity
- Understanding

Currently doing

- Generate Path
- Generate Bike
- Compute Forces
- Interaction
- Crossover (SEX)
- Visualize Ground
- Visualize Bike

Add a card...

yesterday

Problems

- Communication
- Communication
- Communication
- Bottle Neck
- No module testing before committing

Conclusions

1. Excellent project to learn:
 - modern software development tools
 - management tools
 - documentation software
2. Divide tasks in independent modules is a good option
3. Teamwork:

“The whole may be less than the sum of its parts.”
4. Having project manager

Thank you!

