

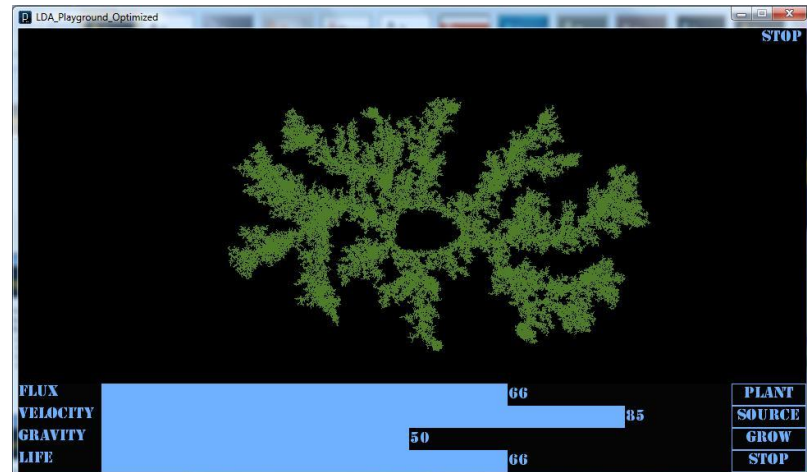
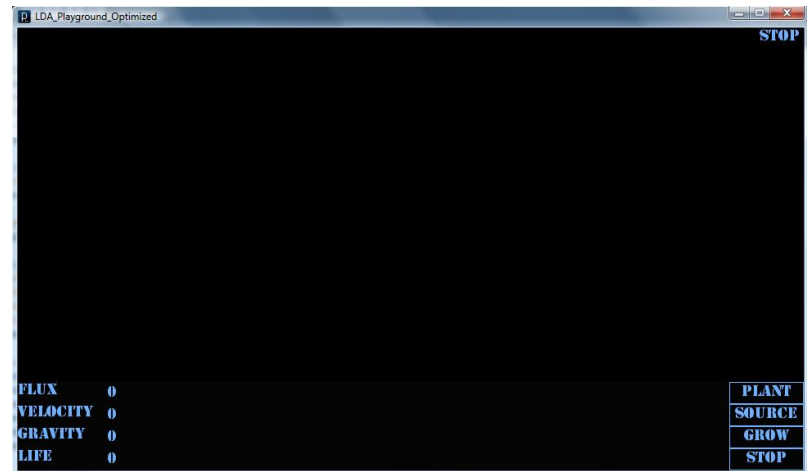
Project 2 – Simulation

By: Mehrdad Ghods

DLA PLAYGROUND

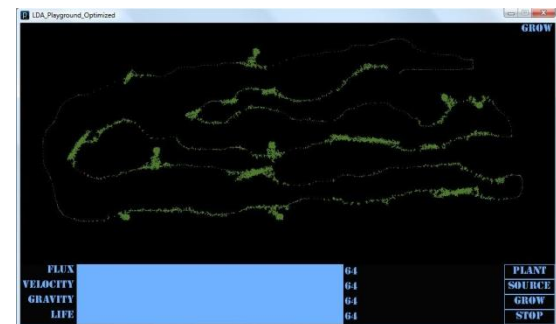
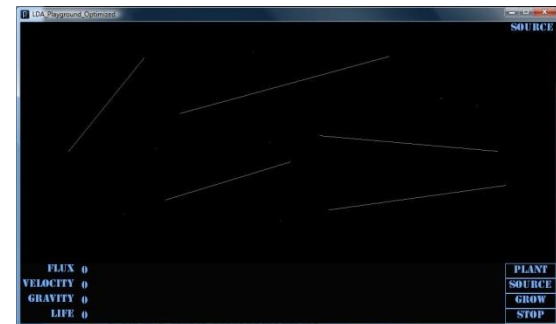
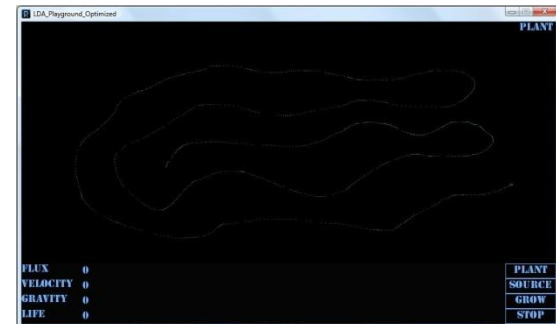
What is DLA Playground?

- It is a sketchpad-like environment where you can plant your seeds, put your resources, and simulate growth of your seeds based on the resources.



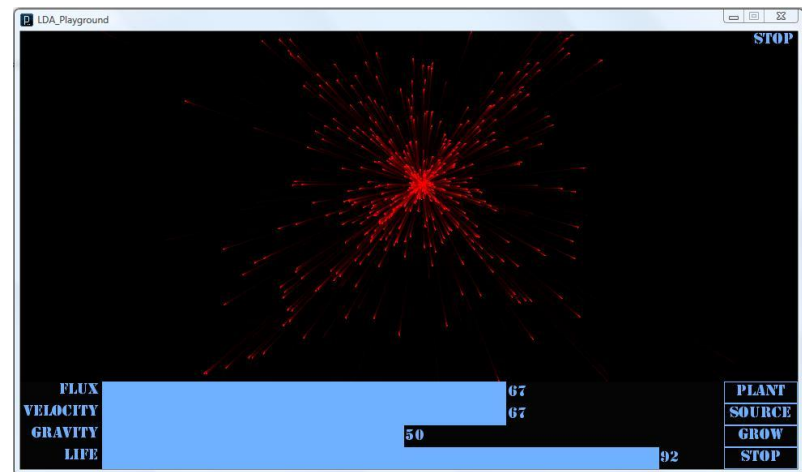
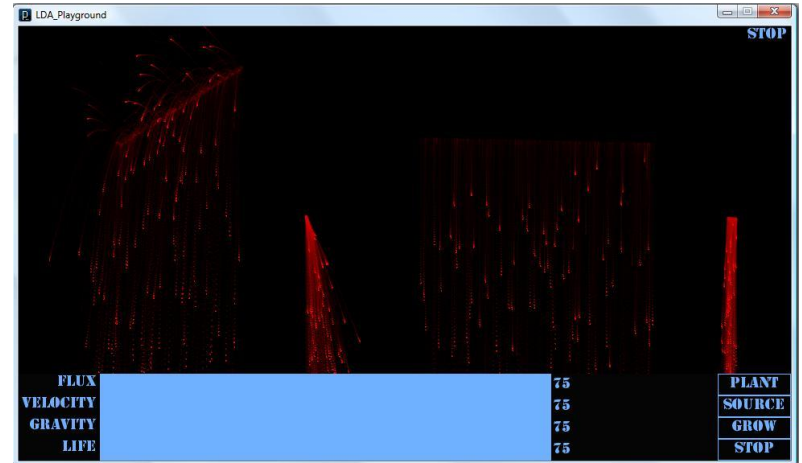
How it works?

- Click Plant button
- Draw your seeds
- Click Source button
- Choose Resource options
- Draw desired resource
- Click Grow button
- Click Plant button and right click on screen in order to restart



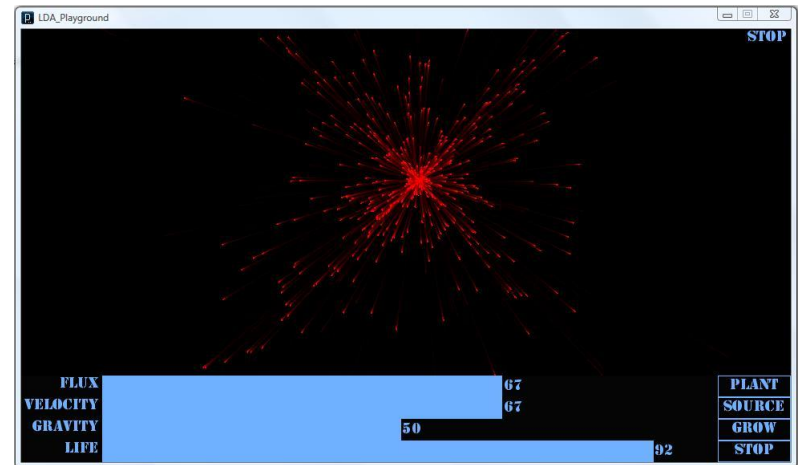
What kind of resources are there?

- There are two kinds of resources:
 - Linear: Click on screen to put first point and drag mouse and release the button to specify second point.
 - Radial: Click on screen.



What are resource options?

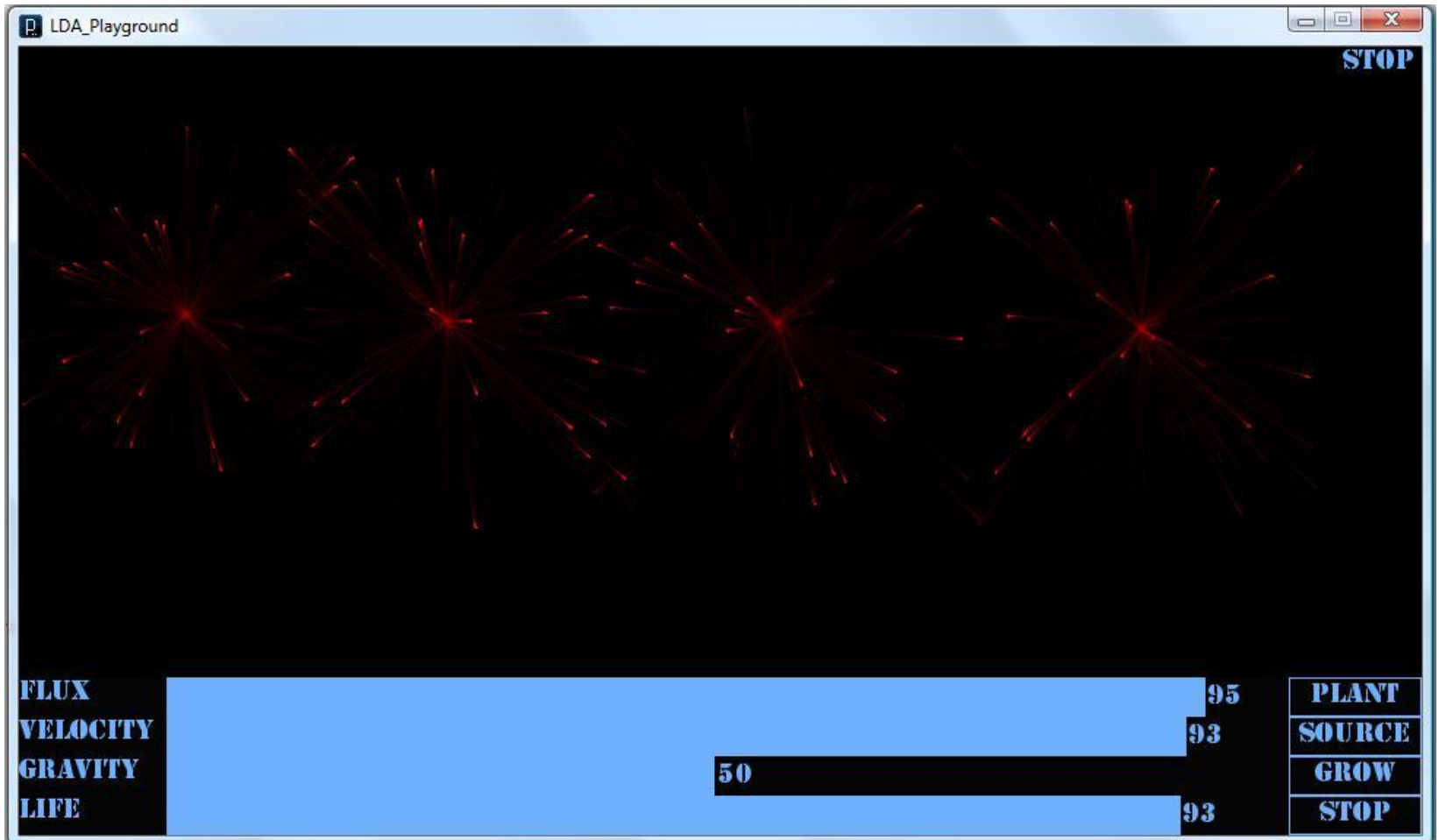
- Flux: Specify particles released from source on each frame.
- Velocity: Specify minimum velocity of each particle
- Gravity: Specify a range of active gravity for each particle
- Life: Specify a range of effective life for each particle



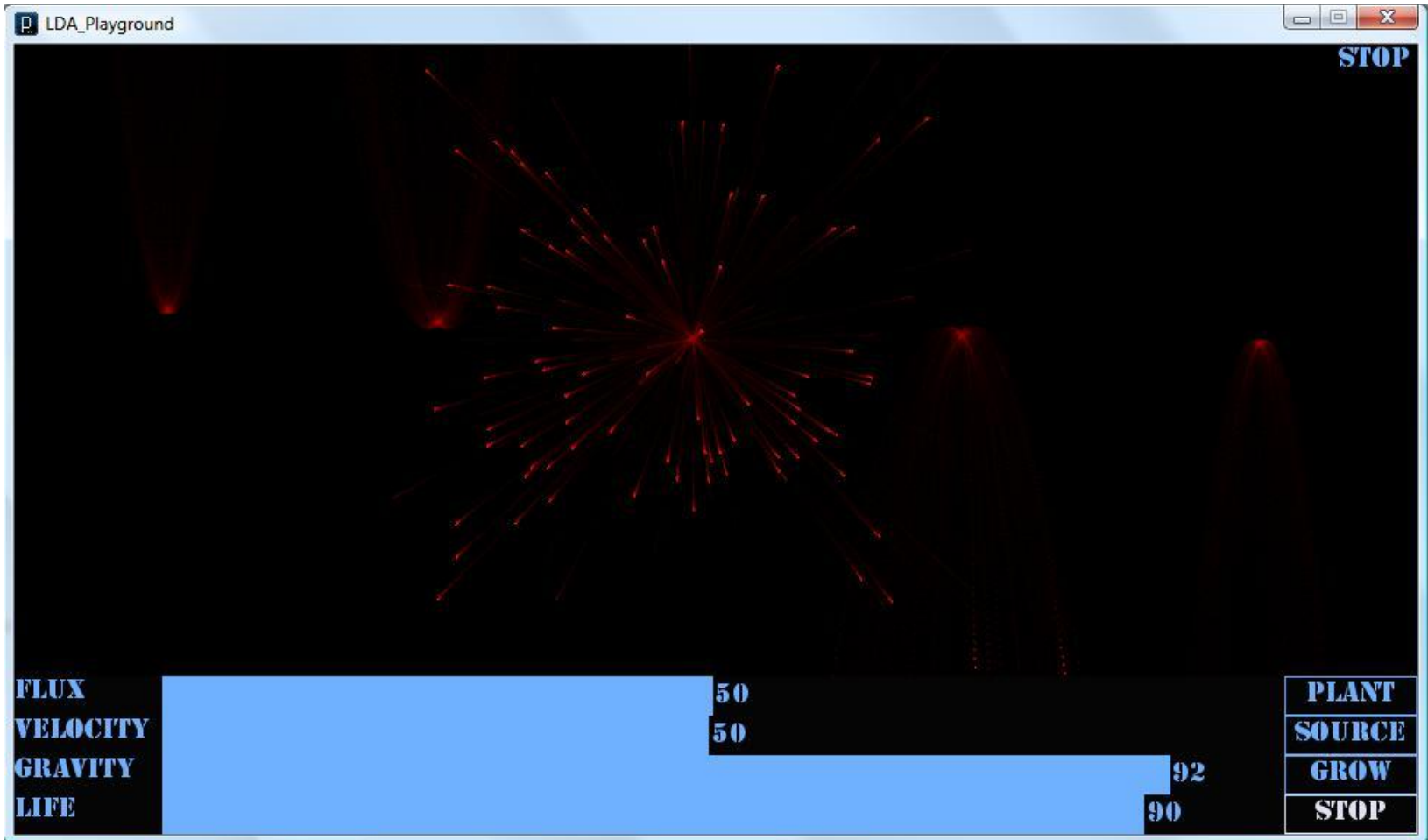
Flux



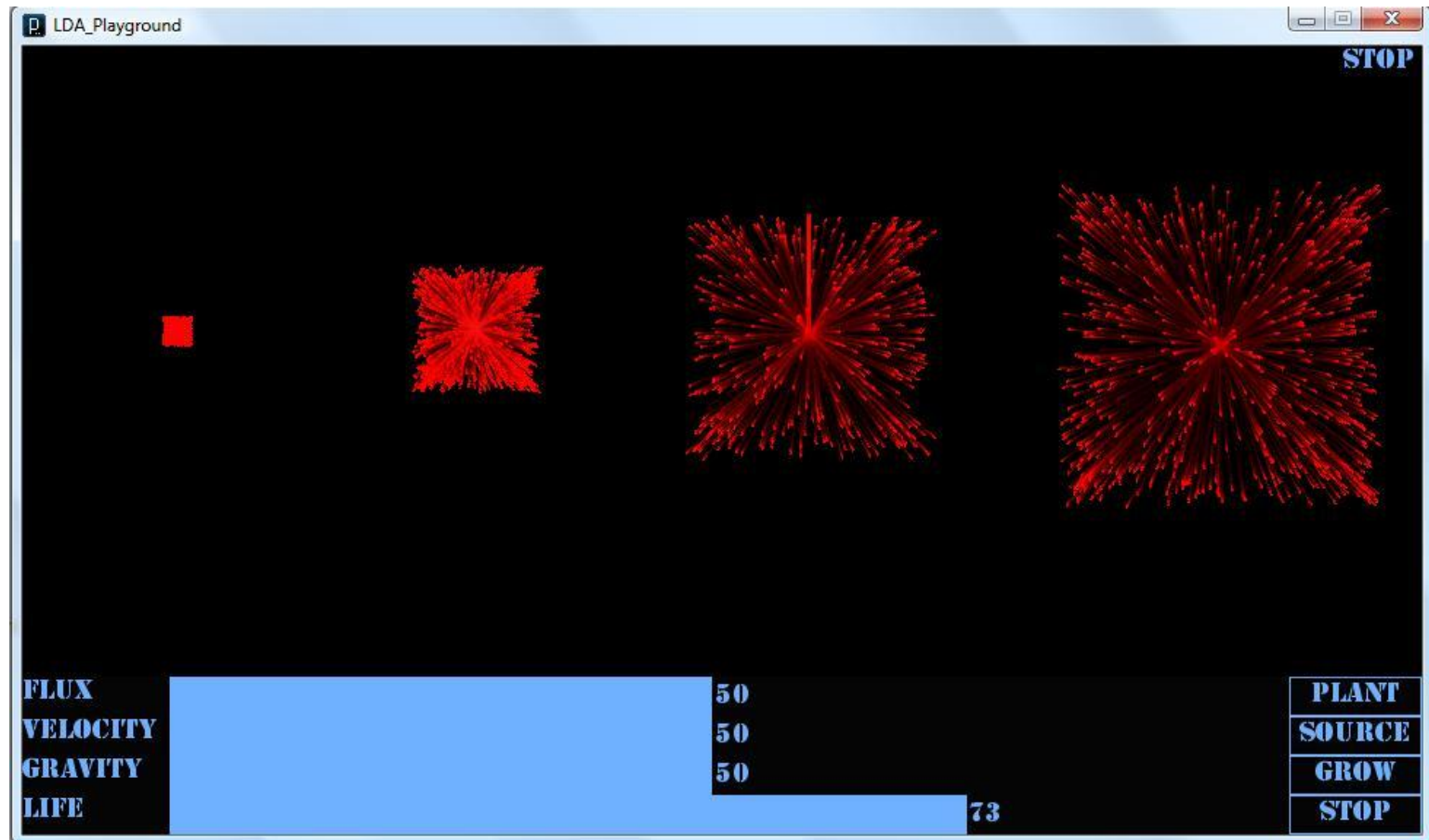
Velocity



Gravity



Life



Engines

- There are two engine that forms DLA Playground:
 - DLA formation and display engine
 - Resource distribution engine

```
LDA_Playground_Optimized | Processing 1.0.9
File Edit Sketch Tools Help
LDA_Playground_Optimized $ Button LDA_ENGINE Particle $ ScreenPixel ScrollBar
// user interface variables
PFont font = createFont("Stencil", 20);
int ribbonHeight;
int buttonWidth;
int buttonHeight;
int scrollLoose = 10;
int margin;

// LDA playground variables
ArrayList sources;
LDA_Source currentSource;
boolean isNewGrow;
ArrayList allPixels;
int sourceID;

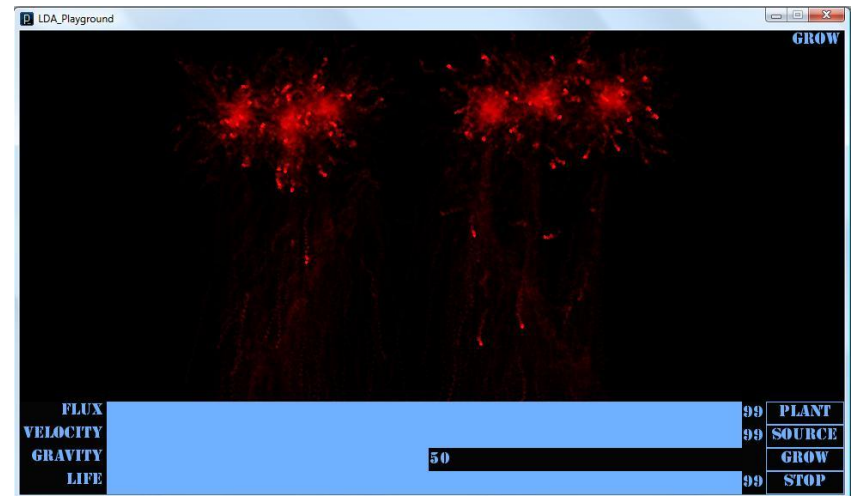
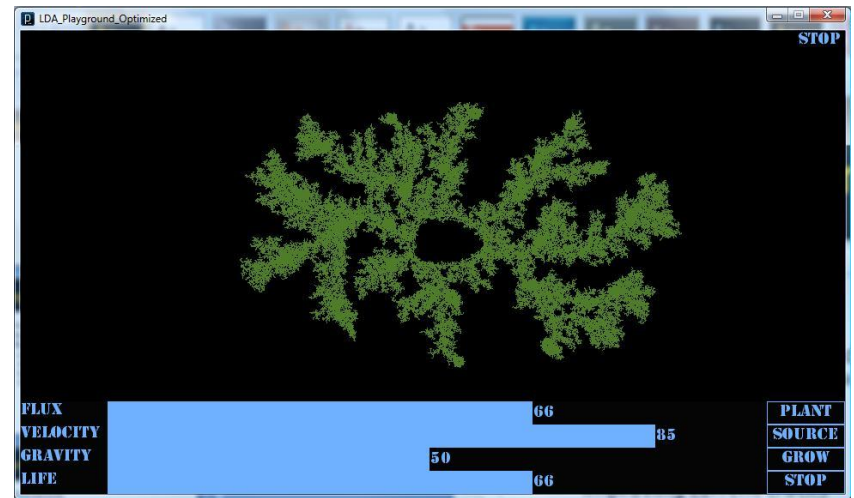
// program modes
final static int PLANT_MODE = 0;
final static int SOURCE_MODE = 1;
final static int GROW_MODE = 2;
final static int STOP_MODE = 3;
int mode = 3;

// particle system source variables
< |||
```

37

Versions

- There are three versions of DLA Playground:
 - $O(n)$: high performance and low quality
 - $O(nm)$: low performance and high quality
 - Resource Exhibit: visualizing resource distribution



Possible Future Developments

- Short-term:
 - Adding Save Feature
 - Combining screens for seed plantation and source drawing
 - Improving visual effects
 - Adding features to user interface
 - Improving current cracks
- Long-term:
 - Adding auto seeds plantation feature
 - Adding a GA for finding best resource development for specified plantation
 - Adding a GA for finding best plantation for specified resource



Questions and Suggestions?
