



Gato

GRAPH ANIMATION
TOOLBOX

- Gato is a program that visualizes algorithms on graphs
- The first version appeared in 1998
- Various students and developers have worked on it since its beginnings, adding features and fixing bugs

So why is it useful?

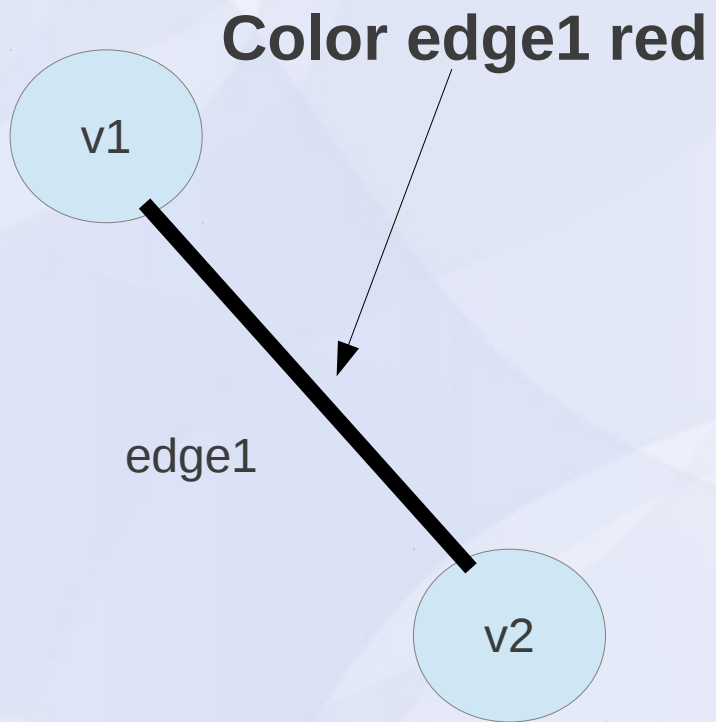
- *Graph algorithms are **hard**...*
- They might be easier if there was a simple way to see various algorithms run through graphs
- Gato fills that need, helping students wrap their head around these algorithms

Isn't it already working?

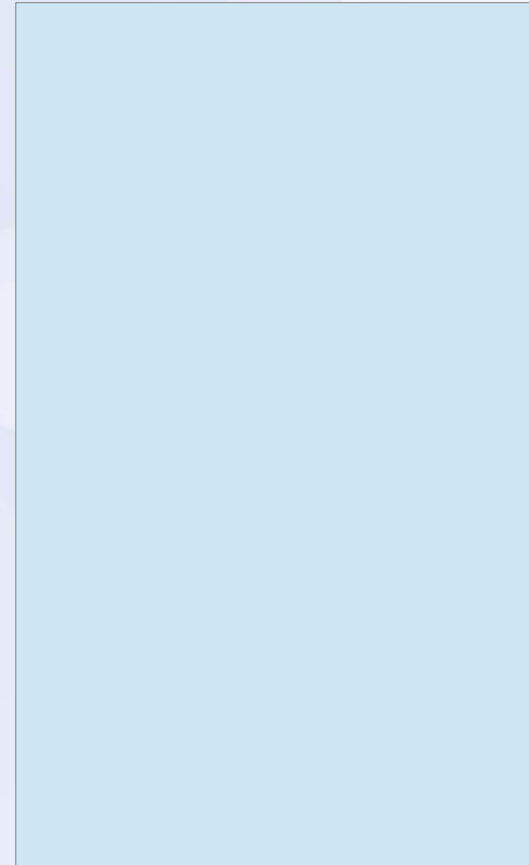
- Yes
- But could we lower the barrier to entry?
- By putting Gato on the web it would be easier to access(no svn checkouts...), and would be able to reach many more people

Web Gato

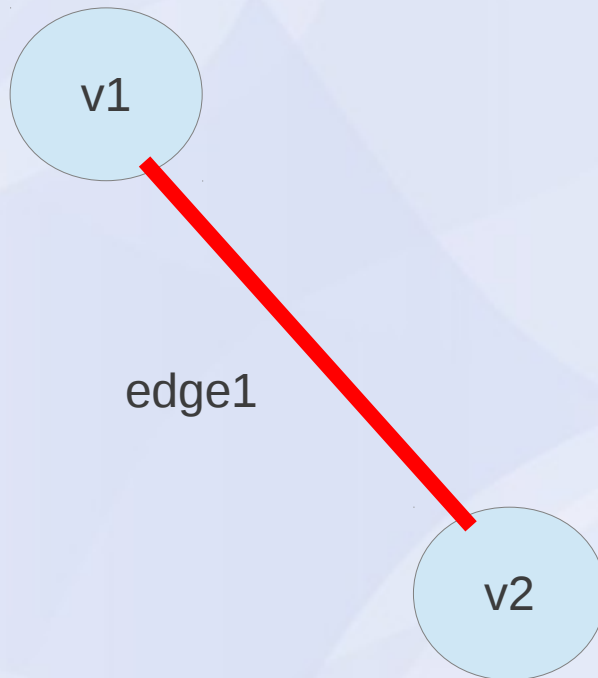
- **We could...**
- Build Gato from scratch with Javascript
- Write an interpreter to translate the python code to Javascript
- Export the animation commands to a file, and animate a graphic with Javascript
- The last approach was the one taken
- As the animations take place in Gato, they are kept in a list
- After the history is fully populated, it is formatted and sent to an SVG file along with some Javascript that takes care of the animation



Animation History

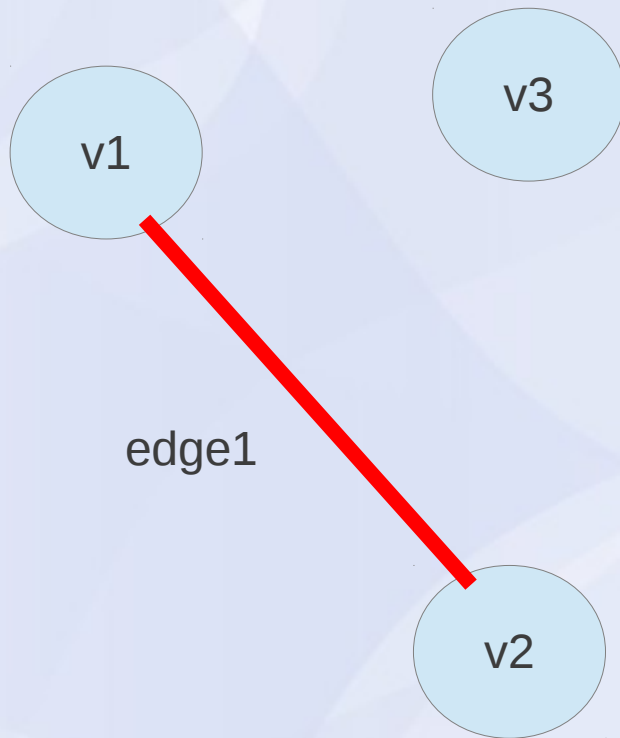


Add a vertex



Animation History

setEdgeColor(edge1, red)



Animation History

setEdgeColor(edge1, red)

addVertex(x, y)

What it comes out as...

```
<line id="g1_(44, 13)" x1="300.0" y1="300.0" x2="300.0"
  y2="350.0" stroke="#DDDDDD" stroke-width="4.0"/>
<line id="g1_(45, 11)" x1="150.0" y1="350.0" x2="200.0"
  y2="350.0" stroke="#DDDDDD" stroke-width="4.0"/>
  <circle id="g1_1" cx="50.0" cy="350.0" r="14.0"
    fill="#EEEEEE" stroke="black" stroke-width="0.0" />
<text id="vlg1_1" x="50.0" y="354.62" text-anchor="middle"
  fill="white" font-family="Helvetica" font-size="14.0" font-
    style="normal" font-weight="bold" >1</text>
```


What's next

- “Movie” Playback
 - User could jump to any point of algorithm run
- UI Overhaul
 - My feelings won't be hurt if you say it's ugly
- iPad version
 - Tablets are increasingly being used for education
 - Tablet hardware offers options not available on the PC
 - Pinch-to-zoom
 - Orientation awareness