

Introduction: Performance platform

Documentation

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Introduction : The name of my project is *Drive away*. There are swarms of digital ants on the screen, but visitors have the power to drive them away .This is an live and interesting interactive installation where visitors in the tracking system can stop the digital ants coming close . By acquiring the skeleton point to interact with the digital stuffs ,this project can be seen as an widely-applied basic model to express daily life idea or attract or repel philosophy, and I applied the ants to screen in this project and give visitors a repel effect.

Related work : Laurent Mignonneau and Christa Sommerer's art work ,*people on the fly*, is a public art work, in which there is a pedestrian video on the big screen in a big mall, a group of digital moving flies attracted by the walking pedestrians that will be show on the screen, however, when the passers-by stop moving or remain still, the flies are automatically flying away, which demonstrates that digital flies only chase on the movement in the video. This work inspired me to use the particle system and camera tracking technology to express a certain philosophical meaning in our daily life interestingly.



(*people on the fly*, Laurent Mignonneau and Christa Sommerer, 2016)

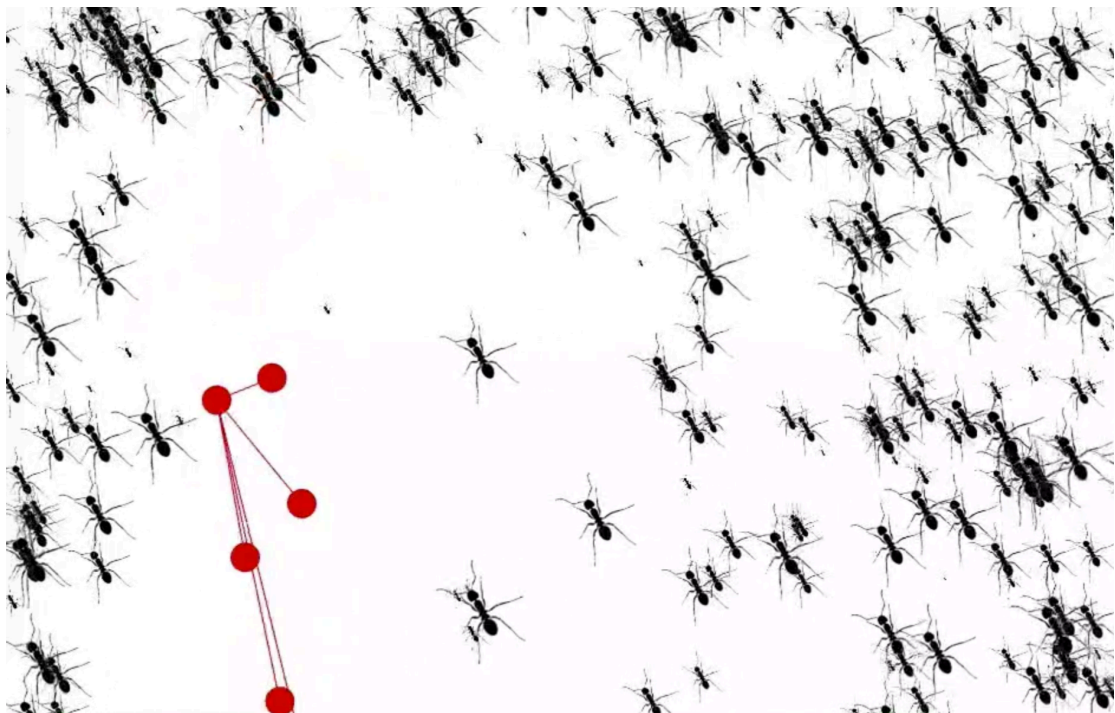
Technic and Execution: This project can interact with the particle system by acquiring the skeleton of the moving visitors through the tracking system. We use the particle system to express it with large or small group of ants, at the same time, acquire the six key points of the skeleton in the tracking system, head, left hand, right hand, left foot, right foot, Spine1, and connect these six with lines, making it appear as a basic human skeleton shape.

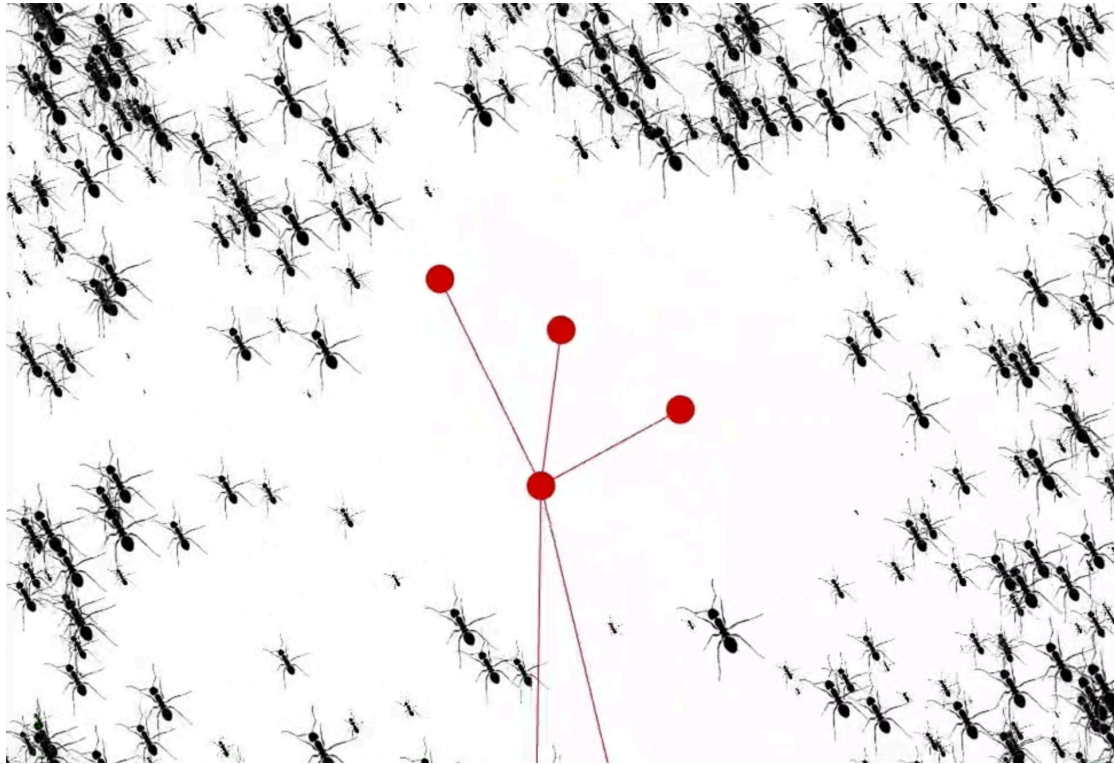
Our interactive particle system project is based on the motion tracking system to obtain the data of skeleton movements of the visitors to manipulate the effects of the particle system (including Head, LeftHand, RightHand, LeftFoot, RightFoot, Spine1), in order to achieve this goal, we are starting decoding our programming part step by step: First of all, we know that the data of the above parts of the skeleton obtained from the motion tracking system is just one point. The two parts of the hands constitute two vectors, then the head data is used as the connection point of the hands. if we want to realize the effect of repelling away between particles and connected vector, We must keep the distance between each particle in the particle system to the two vectors bigger than a certain value, maybe the radius of the ellipse(point). Therefore, we decompose the two vectors into points separated by a certain distance and decode this into the distance from particles to these points which cannot smaller than a specific value.

- The first step: a vector, assuming that the fixed point and the point where the mouse is located constitute a vector, and find the functional relationship of the vector: $y = (a * x) + b$; At the same time, a certain number of point number (5) are set on the line.
- The second step: two vectors, adding a random moving particle system. The distance between each point on the fixed vector, the number of points on the two vectors is represented by a variable, that is, the total length of the vector divided by the radius of the circle, which can be write in code like this: `ellipseNum = distOfLine /`

ellipseSize; in this case, the particles can be guaranteed to be repelled in the entire line. The state of the repel, and the number of points changes as the length of the vector changes. The final effect of this step is very close to being expressed by the skeleton.

- The third step: Adding the data of the motion tracking system, skeleton, the key point is the value of the point where the above fixed point is replaced by the skeleton, important syntax to apply the tracking system data(RightHand as example): RightHand .setup(skeletonName, "blender", "RightForeArm", "vector"); and the second is to pay attention to the data name from the motion tracking system, Read the name of the skeleton (usually something like "snapPoseSkeleton-5"),Exchange the name of the skeleton in the code, then it will work.





(screen short from *Drive away*)

Conclusion and future work

This project is the basic application of my own learning tracking system and performance platform. Through this project, I learned not only how to use tracking system and write the basic syntax of the particle system with open framework , but also how to combine the tracking system data with the open framework. There are some parts can be improve in this project, for example, the particle system is not so smart ,the ants don't seem to have so much awareness, they do not know the existence of each other and they have the same direction. In the future, I can try to make the content of the particle system more diversified and creative. I can also try to use the real-time tracking system to cooperate with more creative expressions, such as using body to paint, or adding feedback to the system, making the whole work more interactive and intelligent.

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