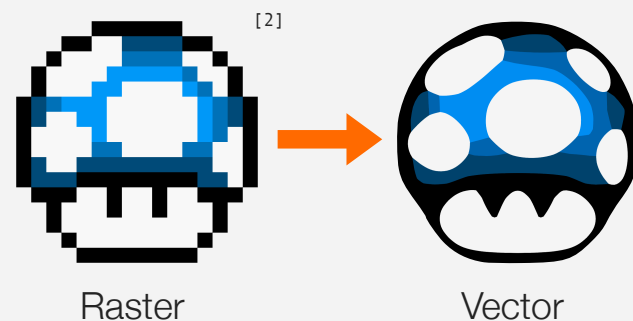


INTRODUCTION

Pixel art is a distinct art style used often in **video games**. In vector format, images can be shown at higher resolution and appear smoother.

Fully automatic methods of vectorisation can **fail to capture artist's vision** perfectly. This research proposes a new, **user guided** method for vectorisation of pixel art, based on a previous method [1] and spring simulation.



PURPOSE

Can guided vectorisation of pixel art through spring simulation produce high-quality vector art?

How to structure the spring architecture?

What controls help users achieve their results?

How satisfactory are the results with no user input?

FEATURES



Multi Colour Support



Sharp and Soft Edge Selection



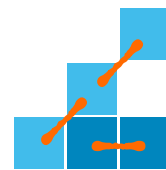
Selective Line Continuity



Simulation Inspired

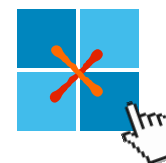
METHOD

1.



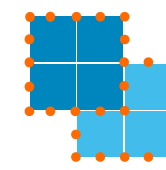
Link adjacent pixels with similar colours, evaluated in HSV colour space.

2.



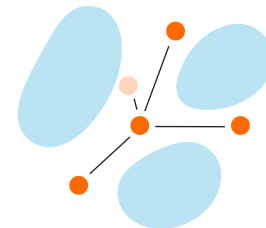
Decided intersecting links with depth segmentation, or with user input.

3.



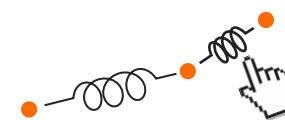
Place nodes along the borders between groups of pixels.

4.



Connect nodes to its origin, neighbour nodes and adjacent areas.

5.



Adjust spring stiffness to smoothen curves and sharpen edges.

6.

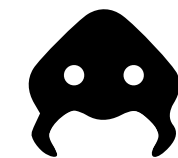


Simulate nodes until a state of minimal energy is reached.

RESULTS



Mario



Calm Invader



Angry Invader



Round Keyboard



Sharp Keyboard



Chest



Round Sword



Sharp Sword

CONCLUSION

The presented **spring architecture** proves to be a **reliable back-end** with potential for further research.

Our method demonstrates the possibility to **replicate** the results of Depixelizing Pixel Art [1].

Our method provides **larger pool** of attainable **results**, which **fit** the **artist's vision** closer.

A vectorisation through spring simulation can produce high-quality pixel art.