

# Colour-emotion analysis:

## Application to computer games

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### Aims

The aim of this project is to analyse the usage of colour within visual art forms such as computer games; the emotional responses that they evoke; and to propose methods to use colour to convey emotions in the visual arts.

### History

Colour has been known to evoke certain emotional responses for a long time; a certain colour choice can drastically change how a person interprets something.

While this principle has been used effectively in more traditional art forms such as painting and drawings, it is usually an afterthought for more modern forms of art such as computer games.

Video games in particular could benefit greatly from using colour due to their dynamic nature which allows for quick adjustment of the colour and therefore the emotional state of a player.

<b>Red</b> Excitement Strength Love Energy	<b>Orange</b> Confidence Success Warmth Security	<b>Yellow</b> Optimism Happiness Warmth Clear	<b>Green</b> Nature Health Freshness Quality	<b>Blue</b> Trust Calm Cool Competence
<b>Pink</b> Compassion Gentleness Softness Love	<b>Purple</b> Royalty Spirituality Mystery	<b>Brown</b> Dependable Steady Trustworthy Simple	<b>Black</b> Formality Sophistication Mystery	<b>White</b> Clean Simplicity Innocence Peace

### Technologies

The main technology being used for this project is MATLAB which is used to extract the RGB component from a game screenshot and to perform operations in order to classify the colours and their emotional affects.

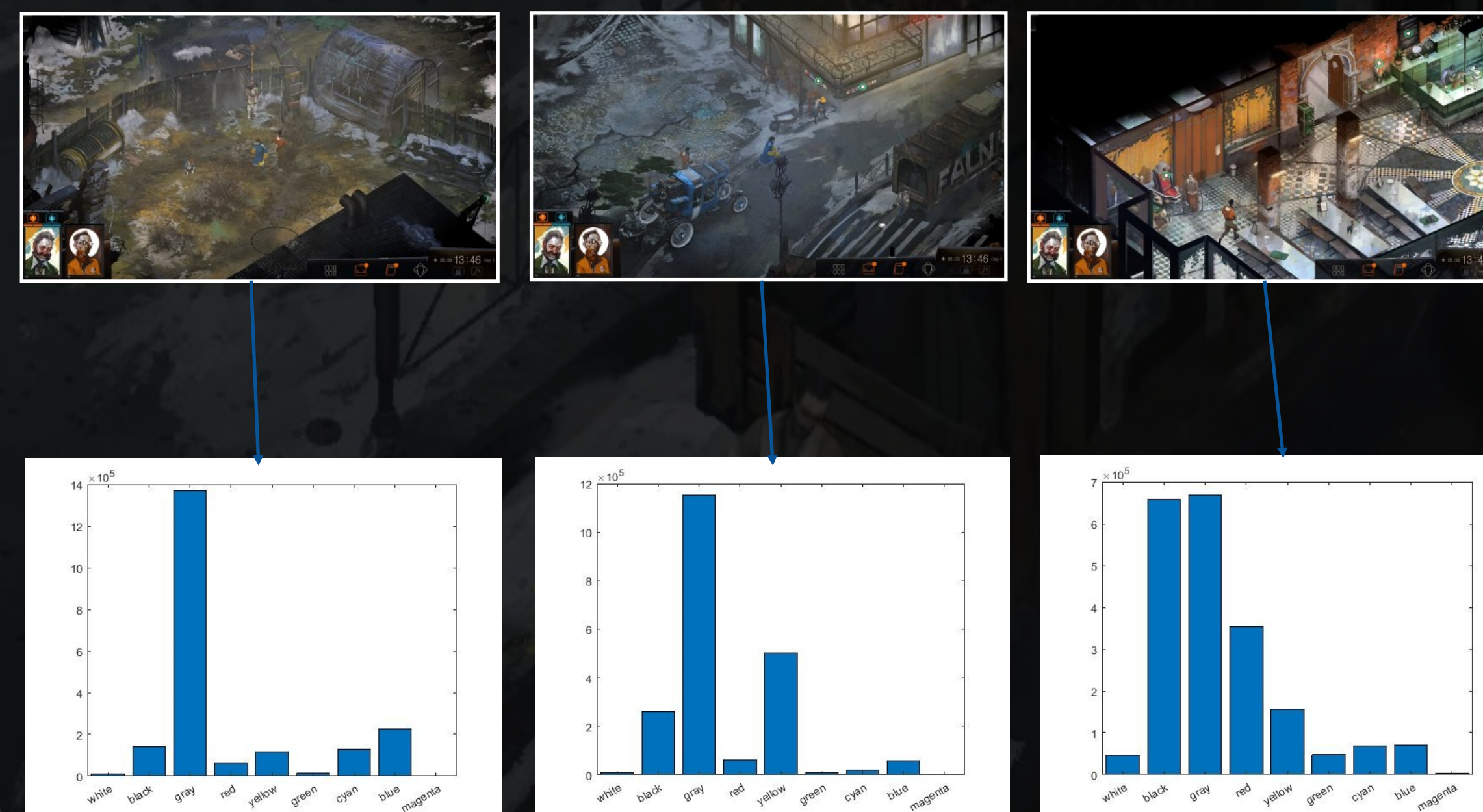
### Methodology

To identify how colour is used in computer games a short video is taken of some of its gameplay. The video is then decomposed into several screenshots and each screenshot is then evaluated individually; this gives an idea of how colour is used in a specific moments and how it is used over a period of gameplay.

The most prominent colours are extracted from the image and then the overall emotional affect of the colours are derived from that.

### Preliminary results

A short clip taken from developer ZA/UM's game "Disco Elysium" was taken which shows the main character walking around a garden, the main road of a town and then the inside of a hotel building. Three screenshots were chosen from the clip and their most prominent colours were calculated as follows:



### Conclusion

The histograms above shows that the game uses colour in an intelligent way. The first screenshot uses mainly dark colours which highlights the bleakness of the game's world. The second screenshot sees an increase in positive emotion as the player walks past a hotel that offers some shelter from the harsh exterior, as shown by the increase in yellow; a warm colour in the histogram. The third screenshot from within the hotel sees a large shift to more positive emotions as can be seen from the increase in warm colours such as white, red and yellow