The Colour of Life: Interacting with SenseCam Images on Large Multi-touch Display Walls

Philip Kelly, Anil Kumar, Aiden R. Doherty, Hyowon Lee, Alan F. Smeaton, Cathal Gurrin and Noel E. O'Connor

CLARITY: Centre for Sensor Web Technologies, Dublin City University

http://sensecambrowser.codeplex.com

- Image management
- Event identification
- Fix JPEG EXIF headers

Overview

Colour Of Life Overview

Obtaining Representative Colour

Interpreting Colour Of Life Visualisations

Information Retrieval

Interactive Displays

Conclusions and Future Works

Colour Of Life

The colours that predominantly occur in one's life may offer a glimpse into their lifestyle

- Exposure to many dark/light colours may indicate someone spends much time indoors/outdoors

Colours that surround us in our lives may have a profound effect on our mood and behaviour

- Warm colours are associated with happiness, pleasure, energy and stimulation
- Cold colours are associated with calmness, healing, sadness
- **If we could measure our interaction with colours, can we get a clue as to how our mood varies?**

Colour Of Life

As the number of images captured per year can extend beyond one million

- **Challenge: Gaining an insight into an individual's lifestyle in a fast, effective and intuitive manner**

The Colour of Life algorithm focuses on the relationship between lifestyle and colour

- *Captures the colours to which we are exposed in our lives (and therefore captured by SenseCam images)*
- *Collates similar colours for specific time periods*
- *Depicts how those colours change over time with a flowing time-line*

Colour Of Life

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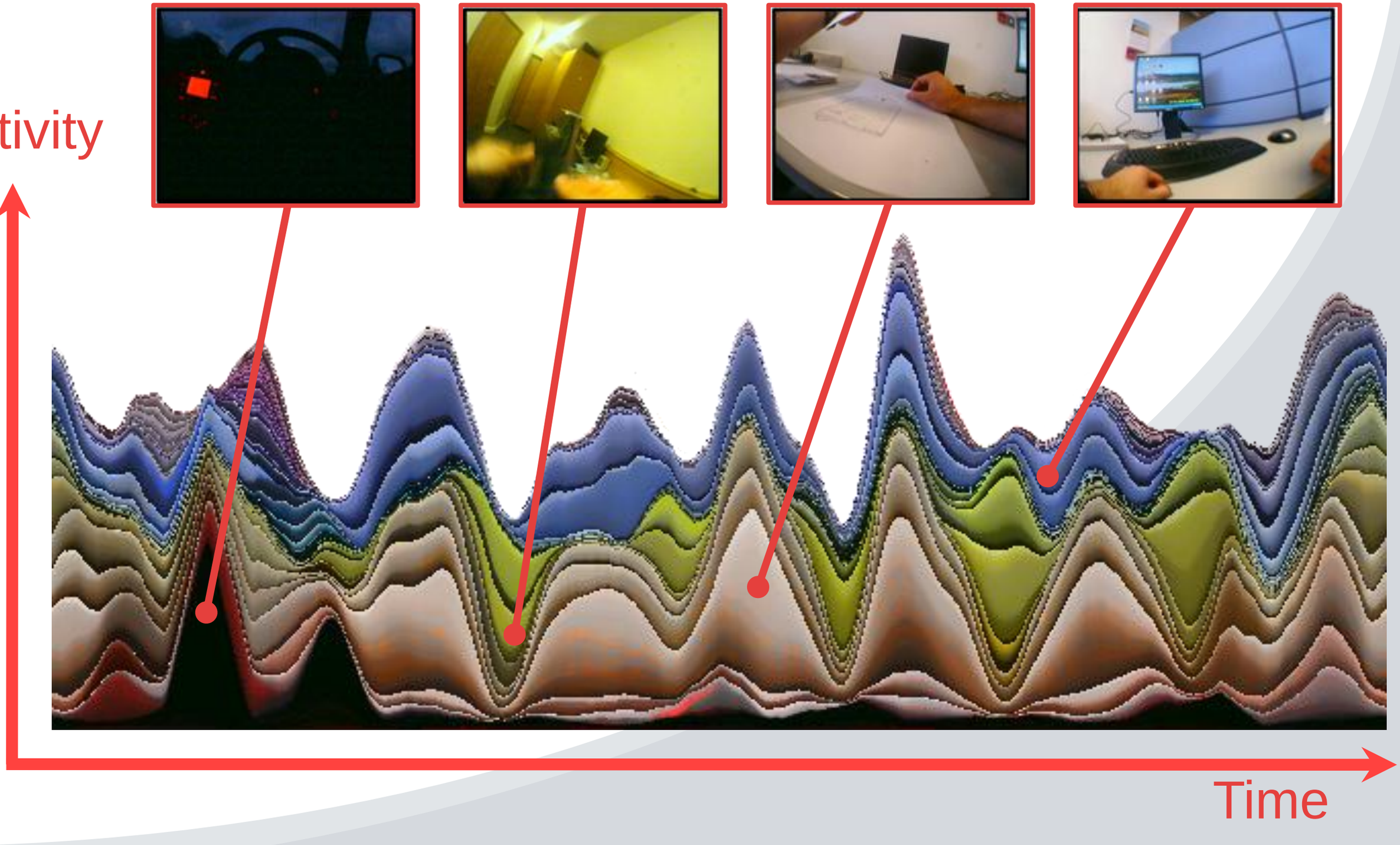
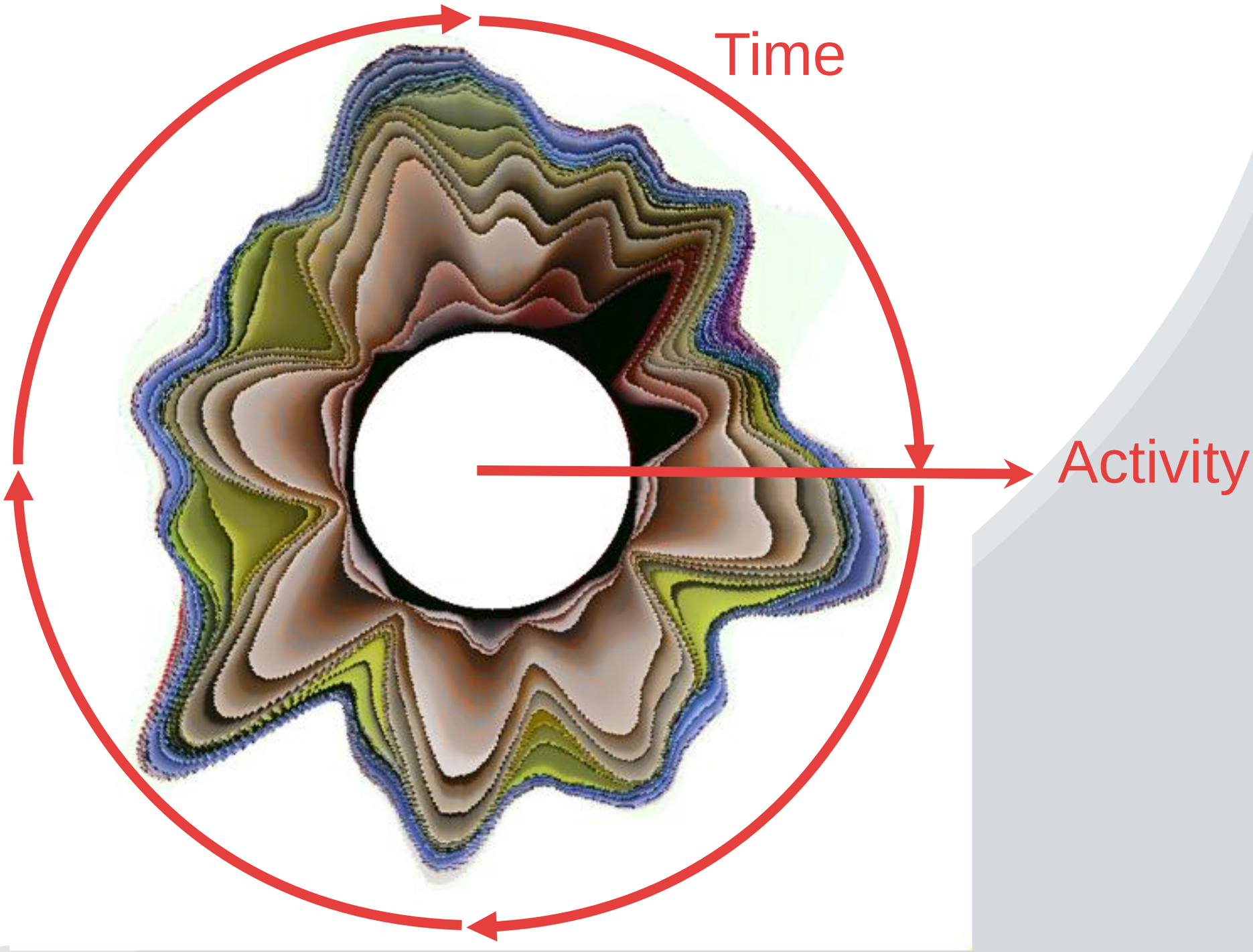


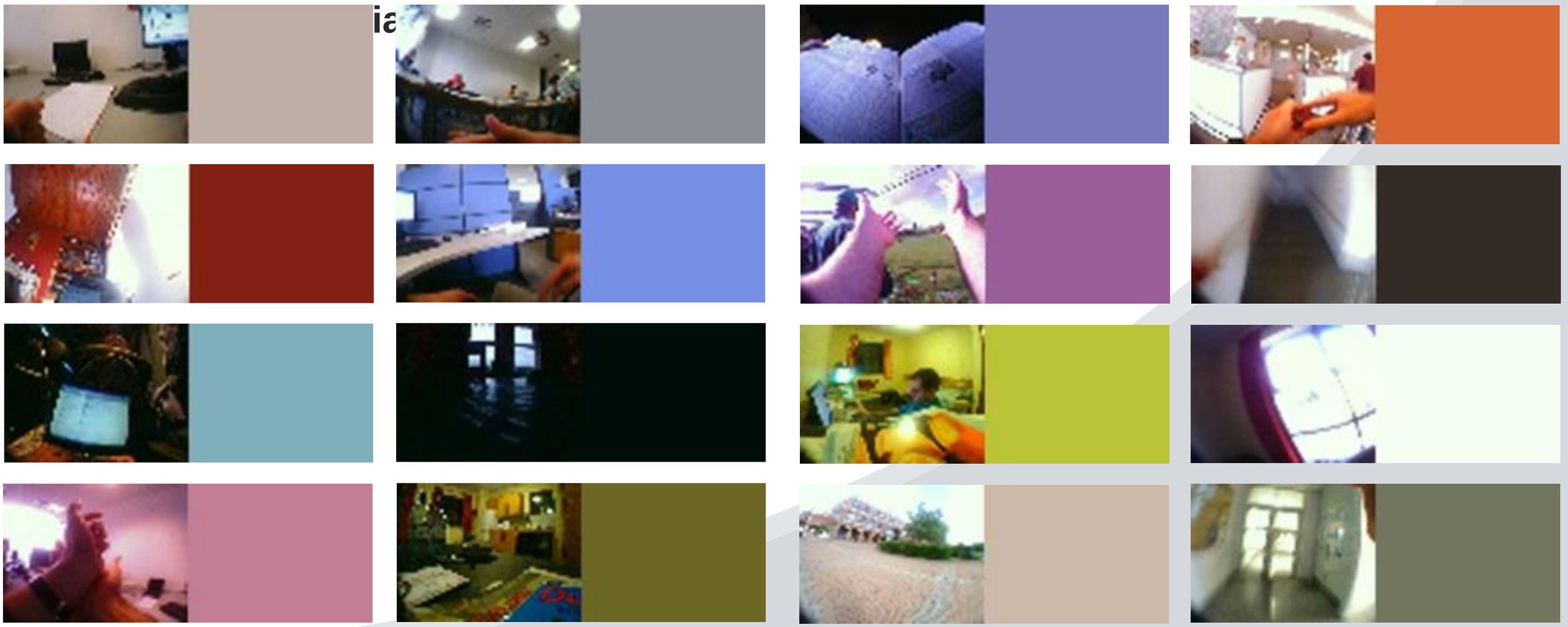
Colour Of Life



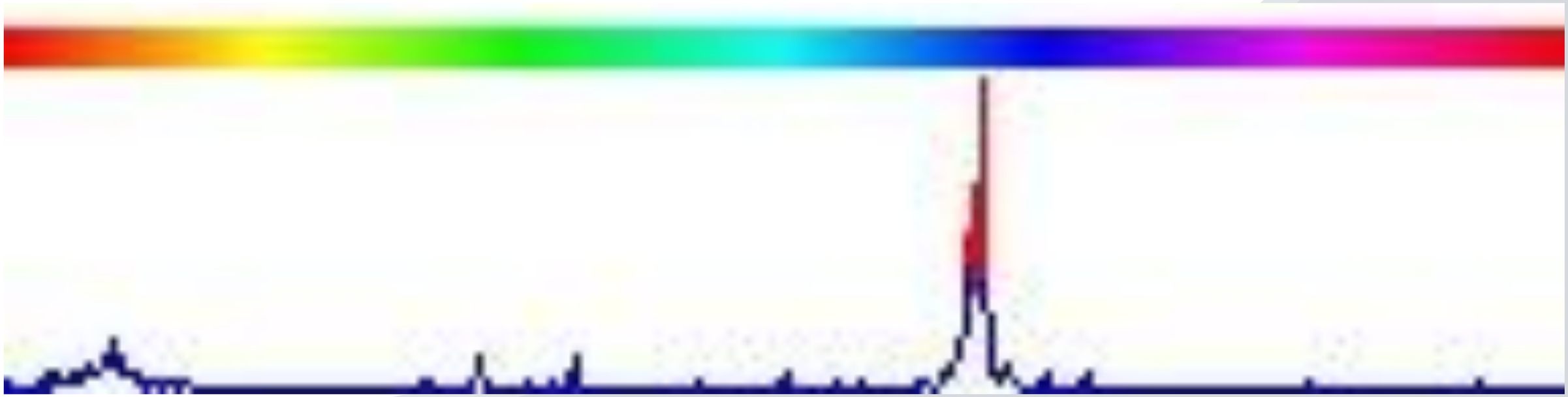
Obtaining Representative Colour

P. Kelly, A. R. Doherty, A. F. Smeaton, C. Gurrin, and N. E. O'Connor.

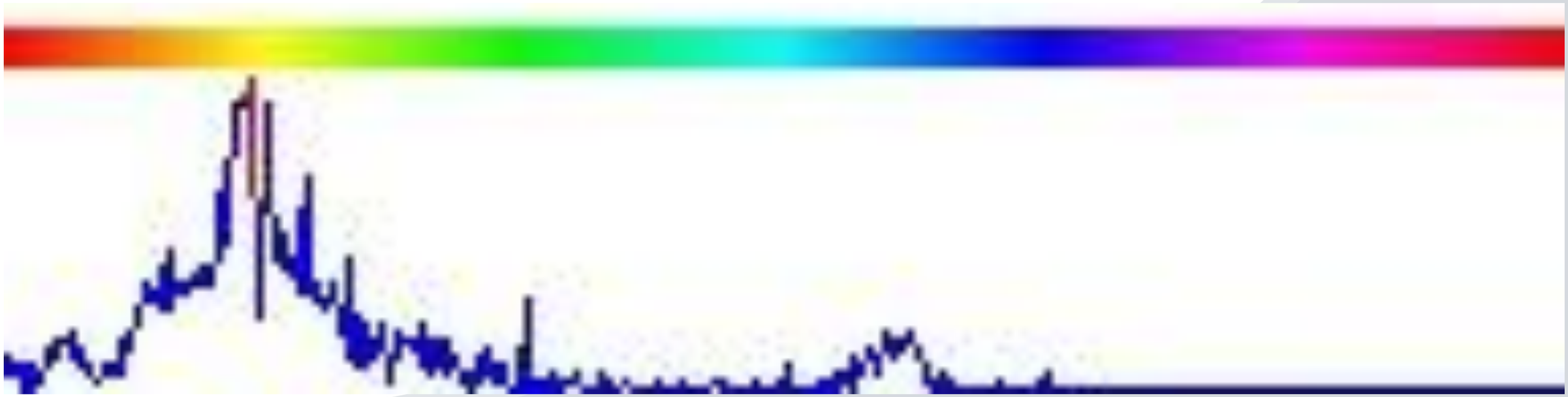
The colour of life: Novel visualisations of population lifestyles. *ACM Multimedia 2010*



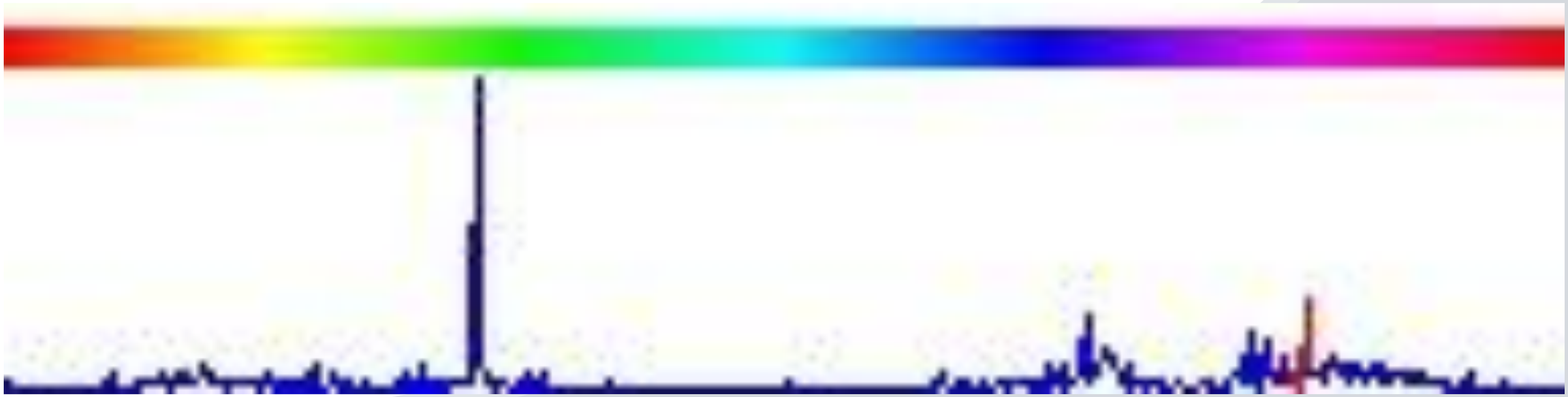
Obtaining Representative Colour



Obtaining Representative Colour



Obtaining Representative Colour

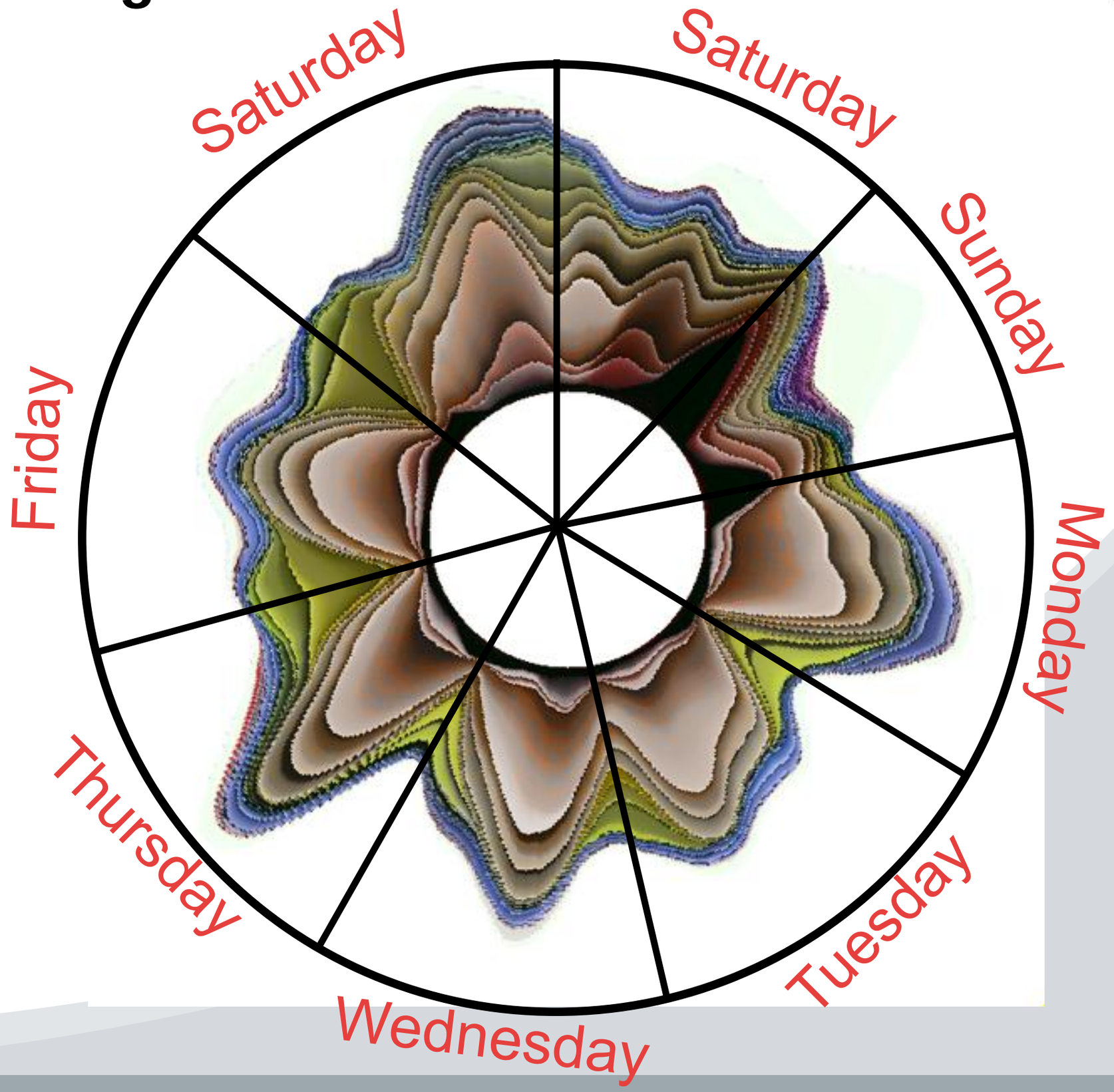


Interpreting Colour Of Life Visualisations

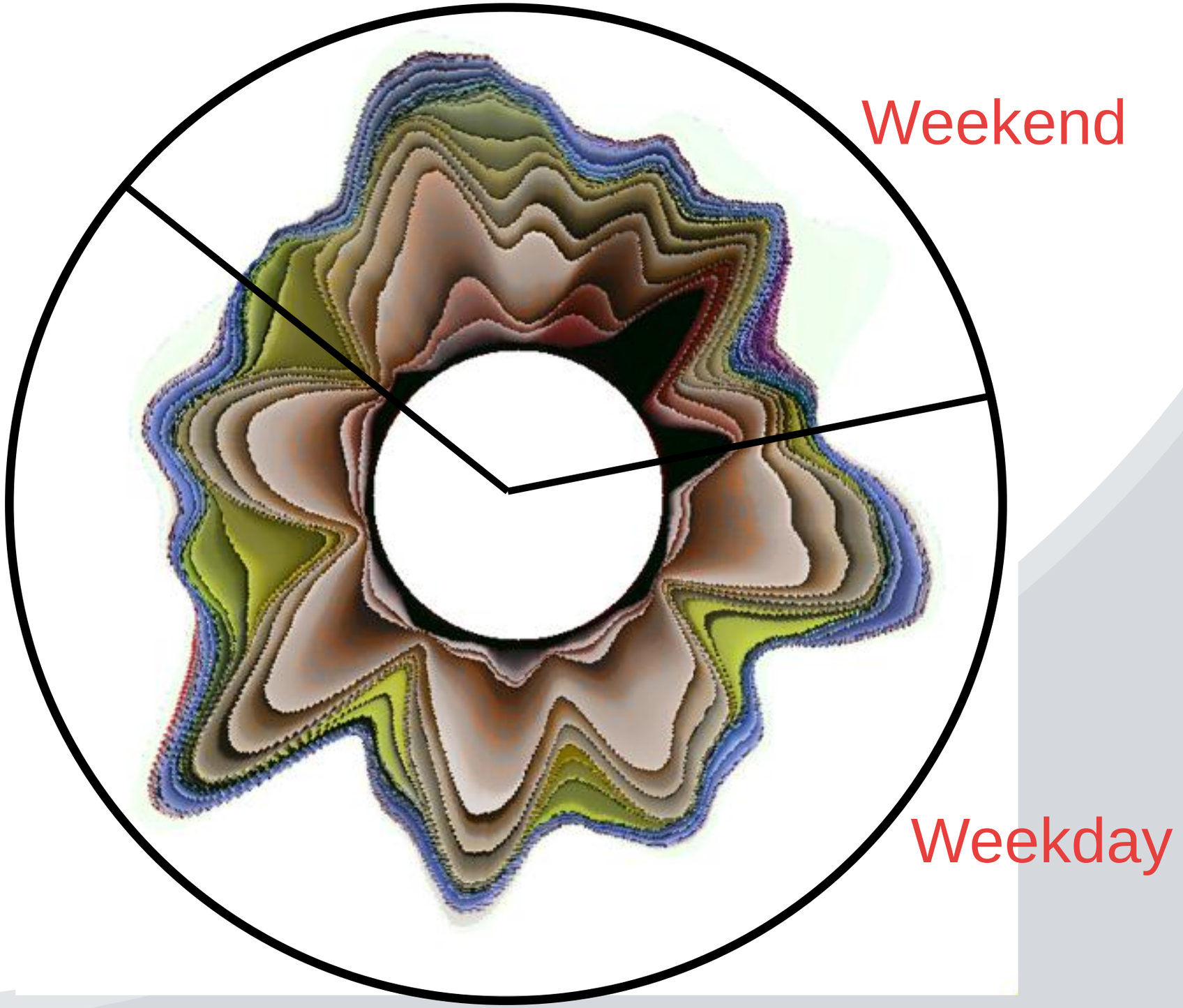
Colour of Life visualisation techniques

- **Can capture a snapshot of an individual's lifestyle over long periods of time**
- **Can capture how that lifestyle varies with changing days, weeks, or years**

Interpreting Colour Of Life Visualisations

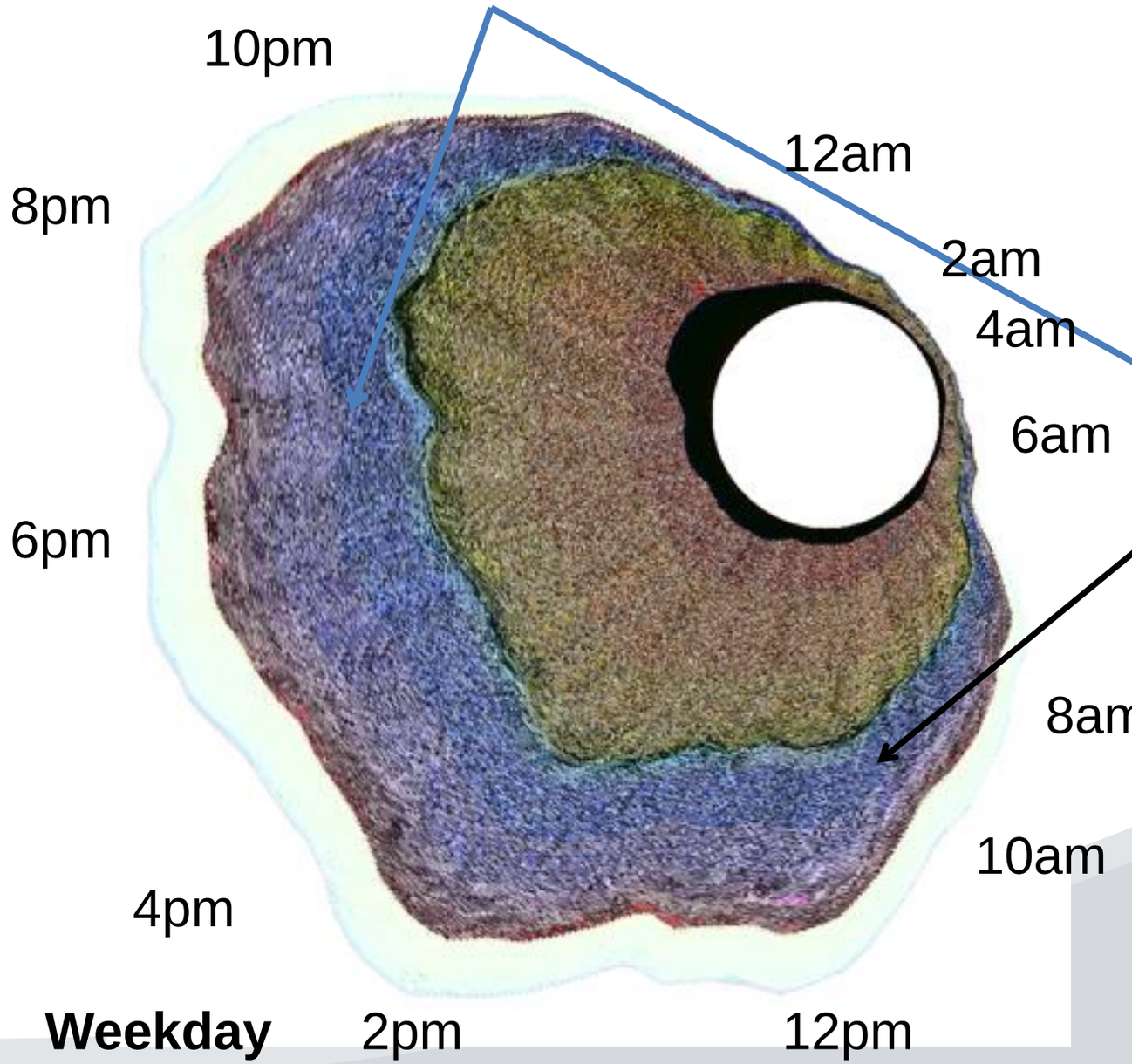


Interpreting Colour Of Life Visualisations

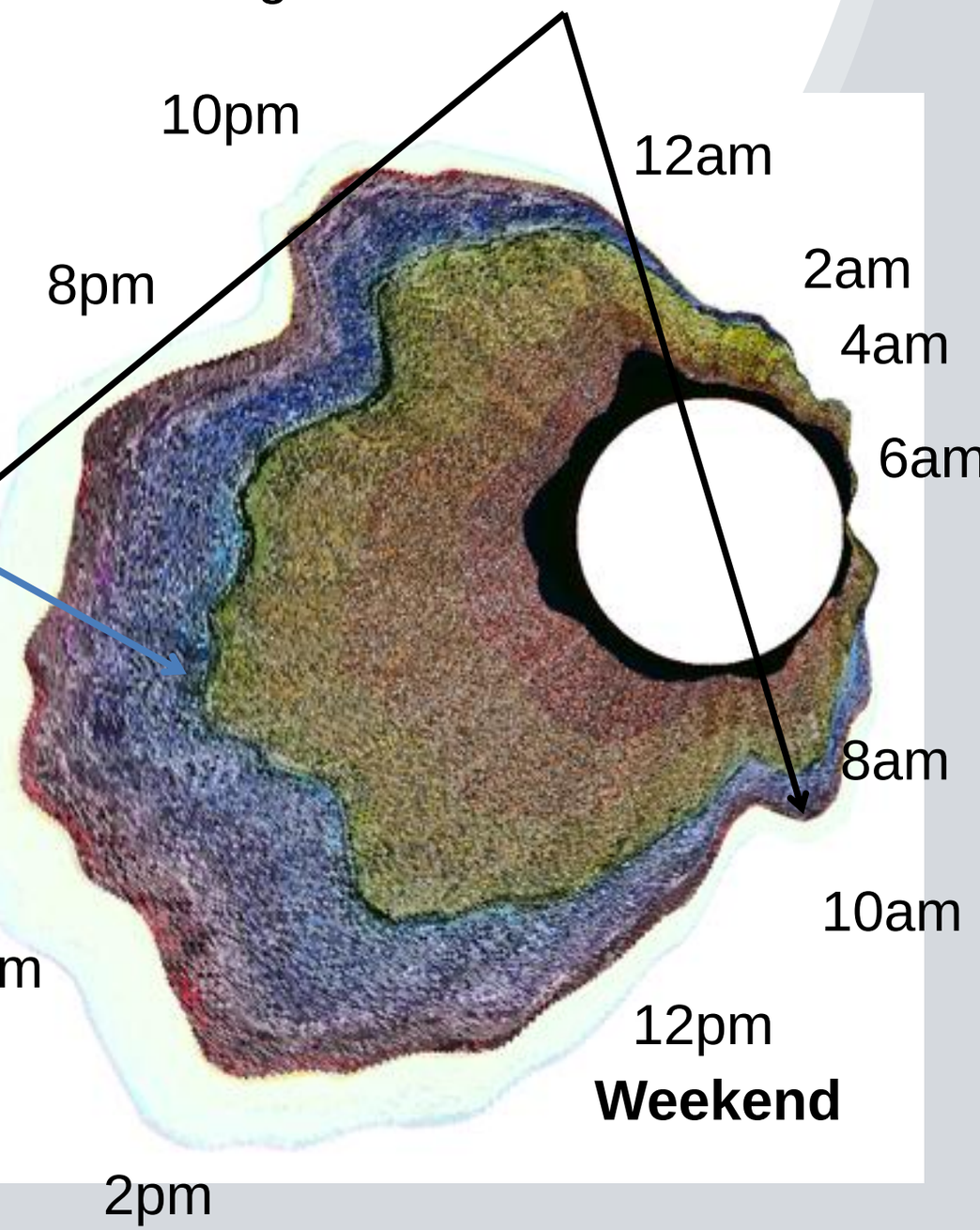


Average Weekday vs. Weekend (7xusers)

More office (blue + purple) colour events during weekdays

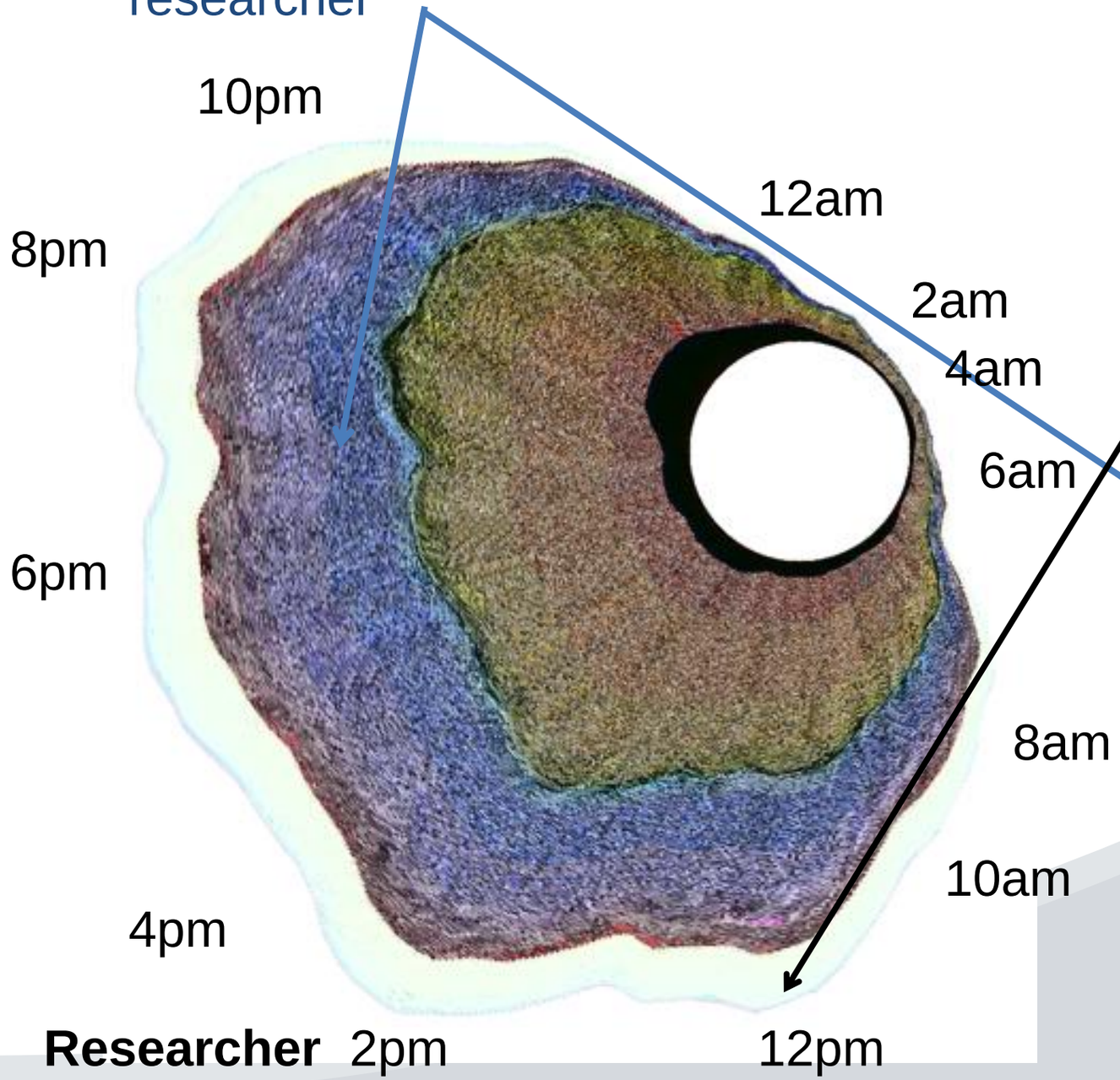


Less data captured in morning at weekends!!



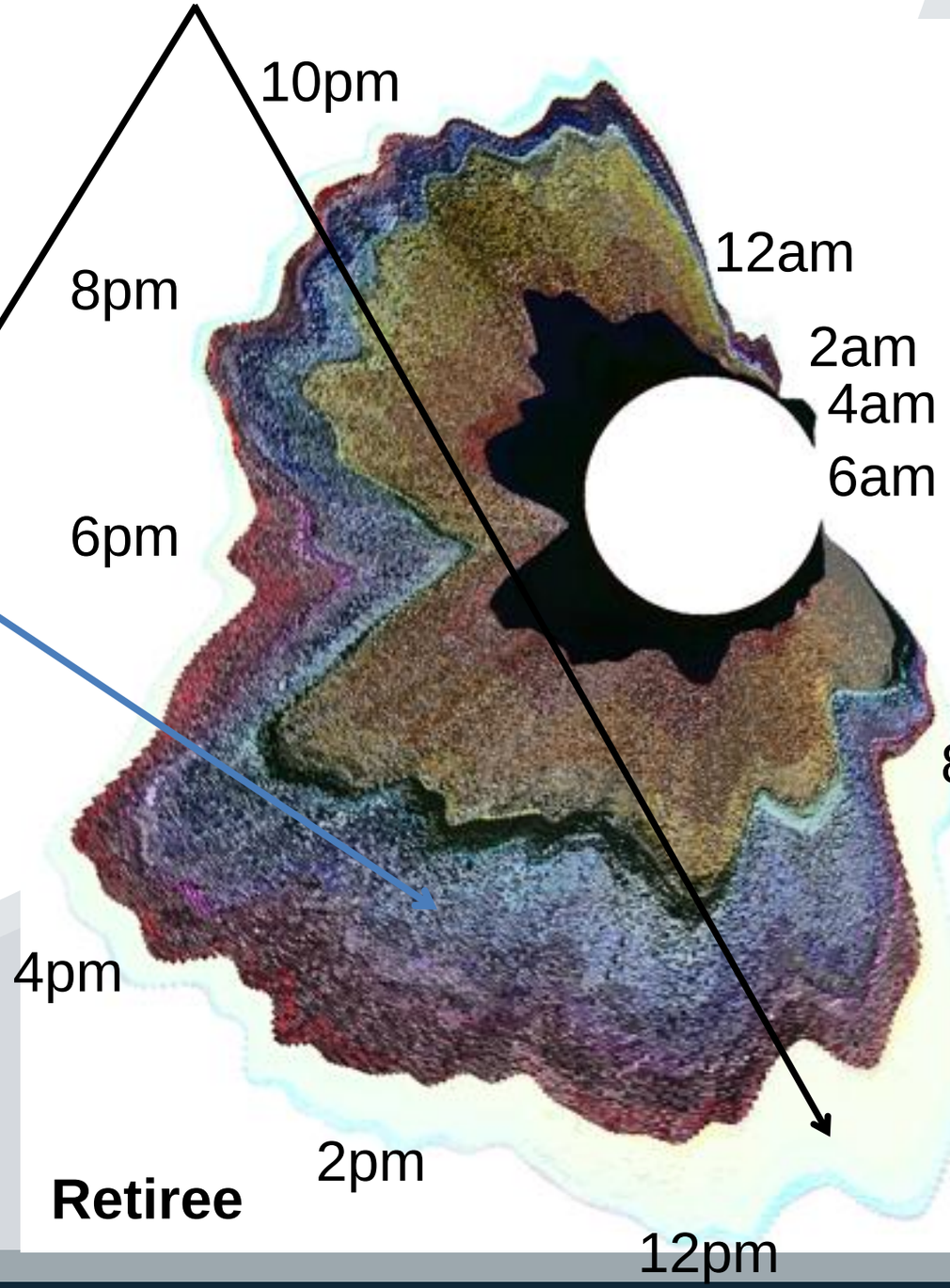
Weekday of Researcher (7x) v Retiree (5x)

More office (blue + purple) colour events for researcher



Researcher

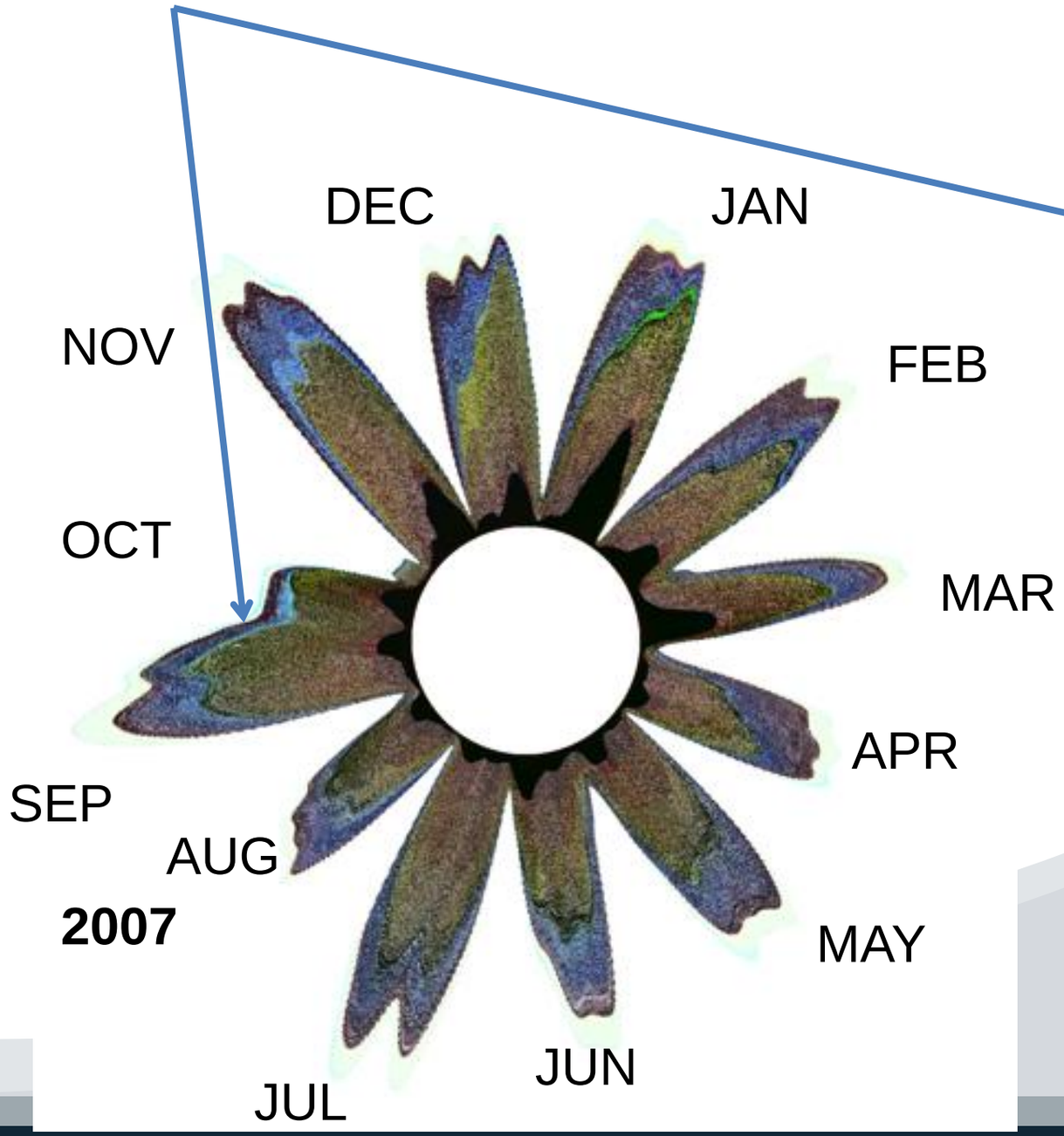
Retired person spends more time outdoors early in day



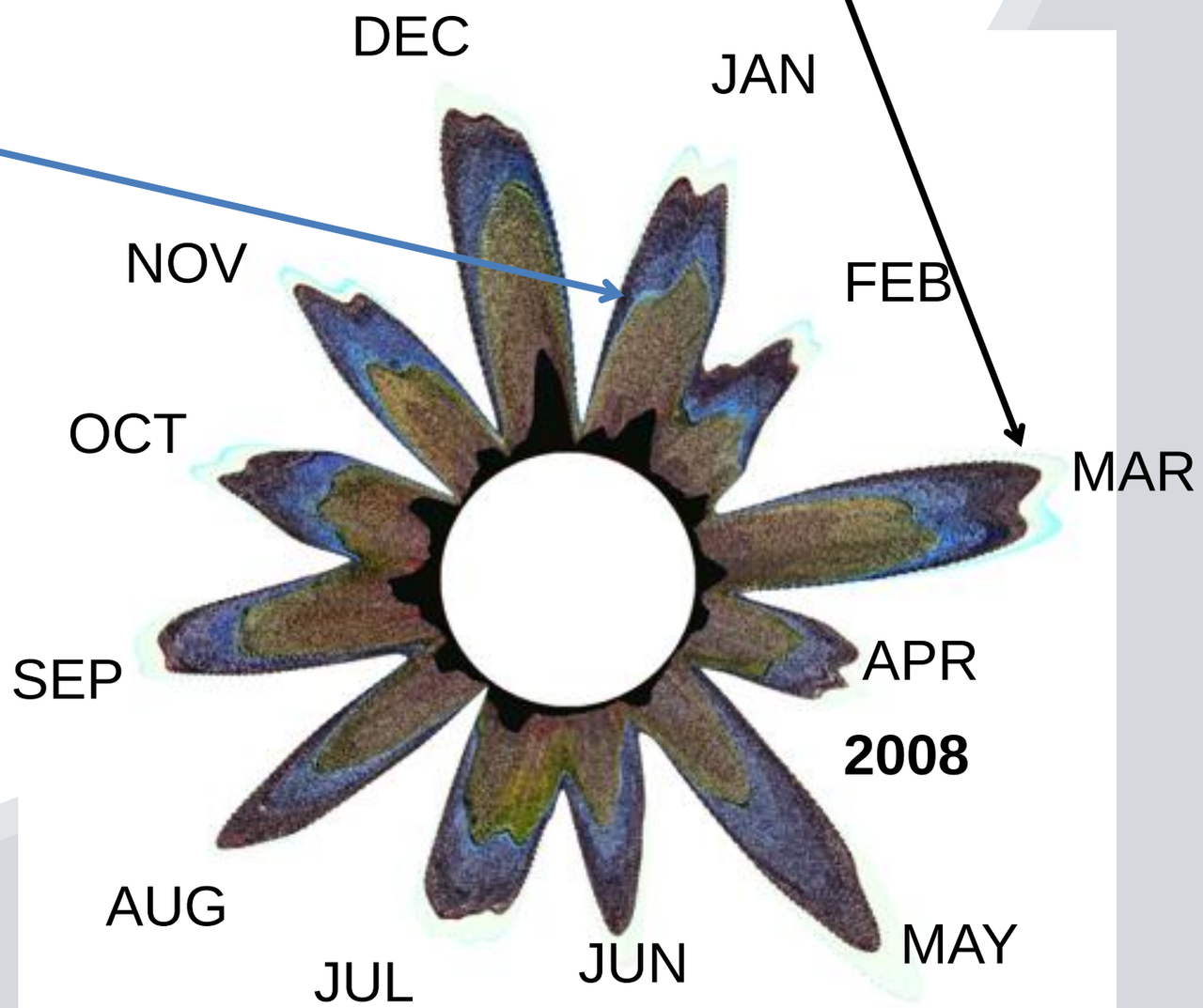
Retiree

Average Monday in 2007 vs 2008 (1user)

Change in office in September 2007 (note lighter colour of blue)

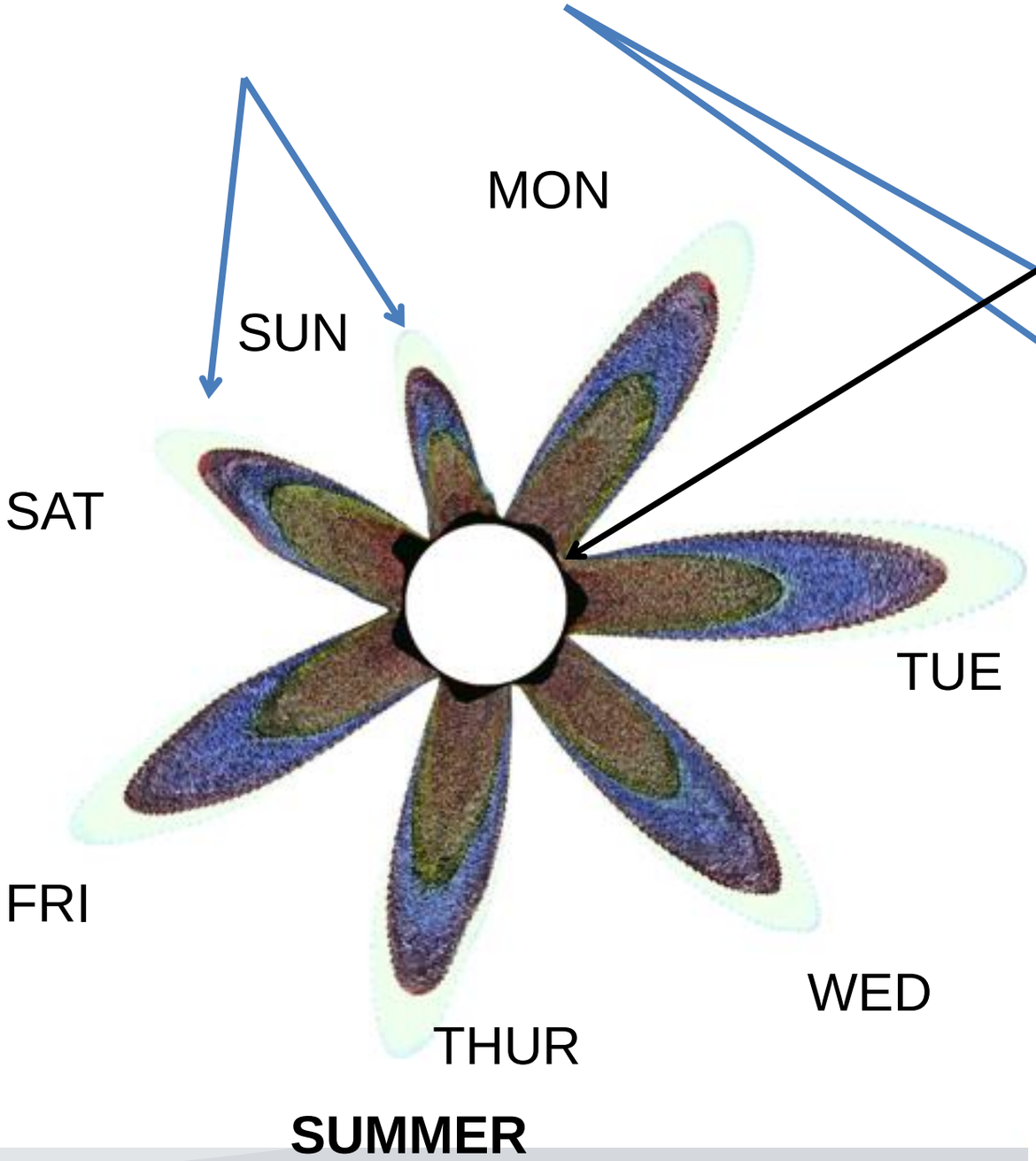


Trip abroad in March 2008, hence more bright outdoors colours



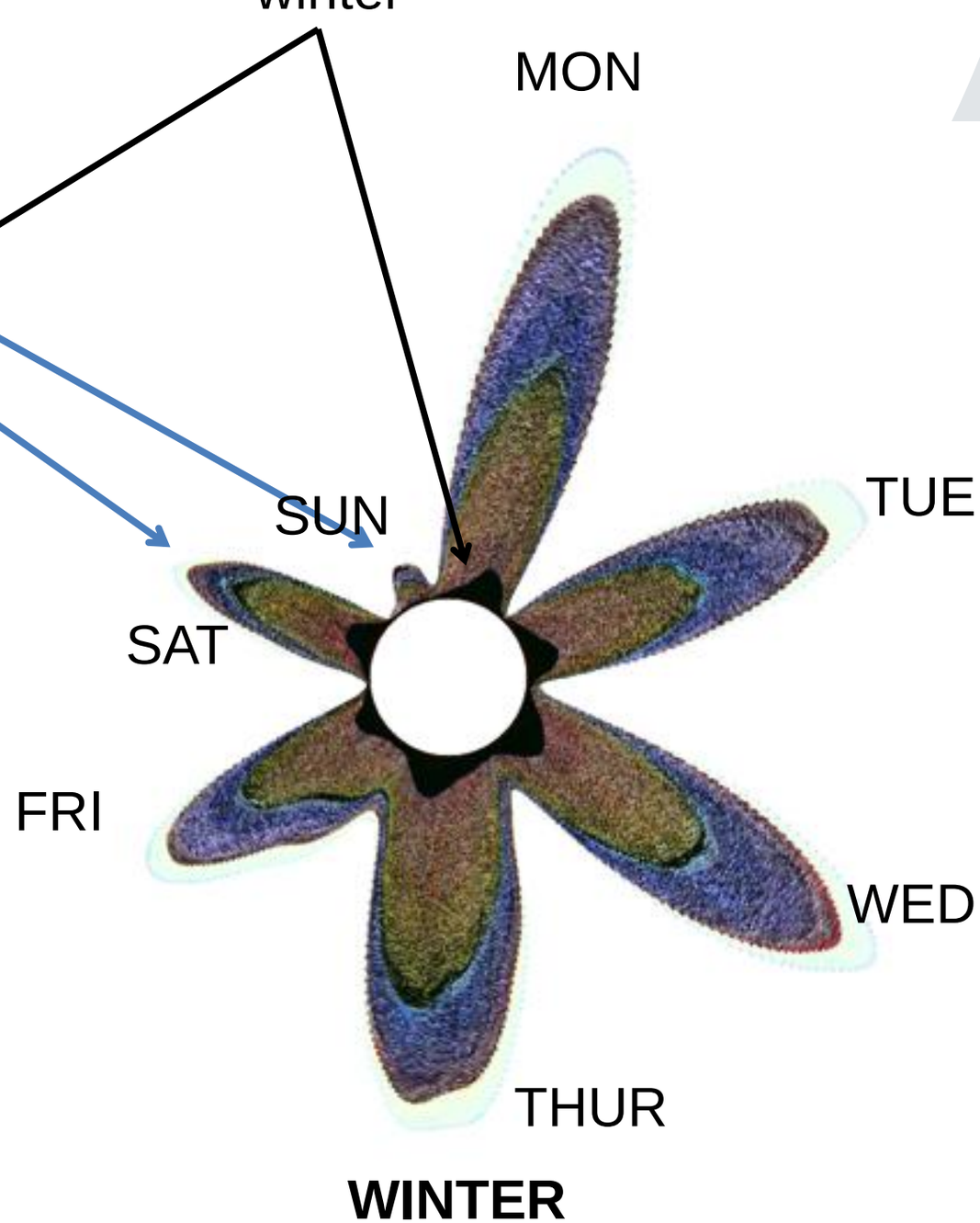
Average Week in Summer vs. Winter (7x users)

More time spent outdoors
at weekend in summer



SUMMER

More darkness in
winter

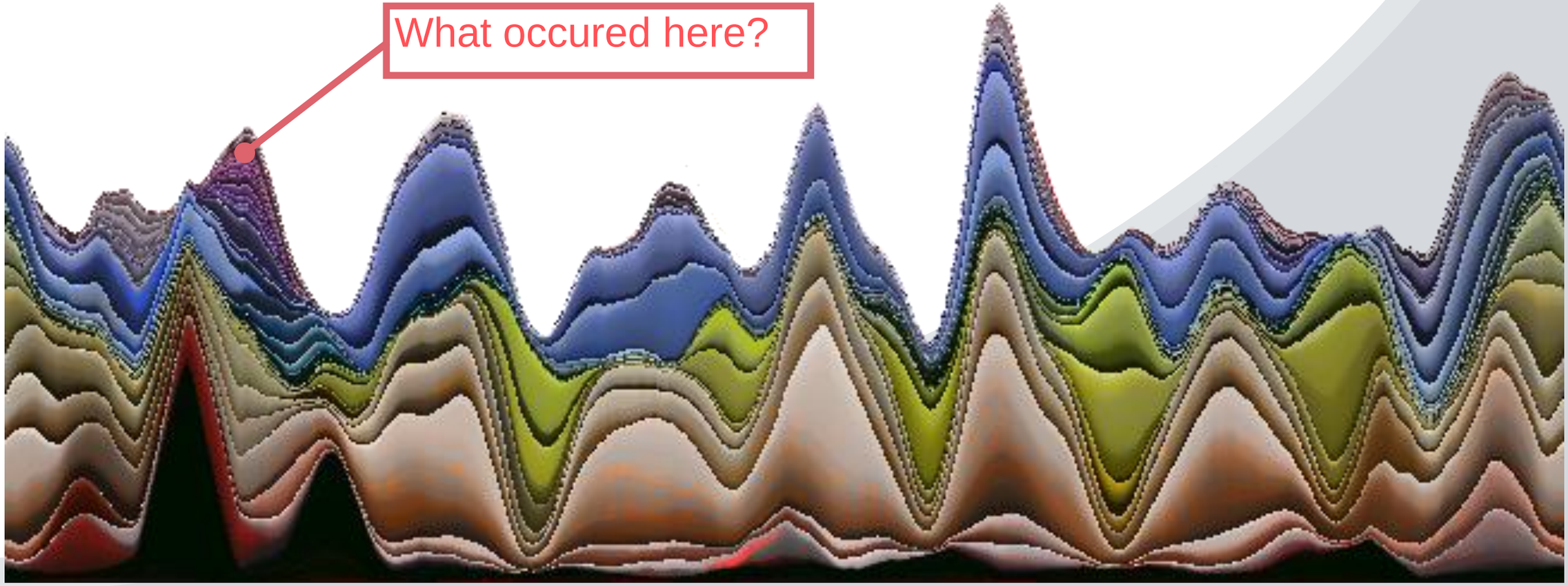


WINTER

Information Retrieval

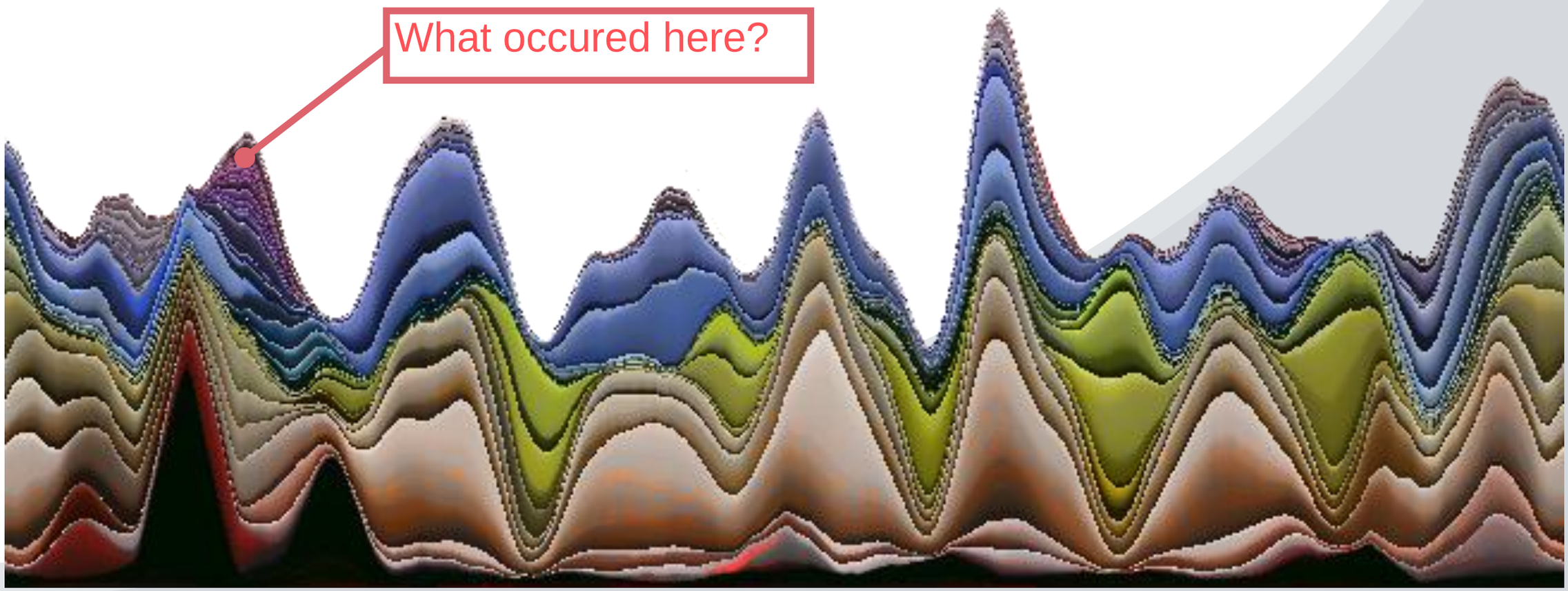
Colour of Life visualisation

- **Advantage: Provides insights on lifestyle**
- **Disadvantage: Does not provide sufficient context to understand the exact activities of a user for a given time period**



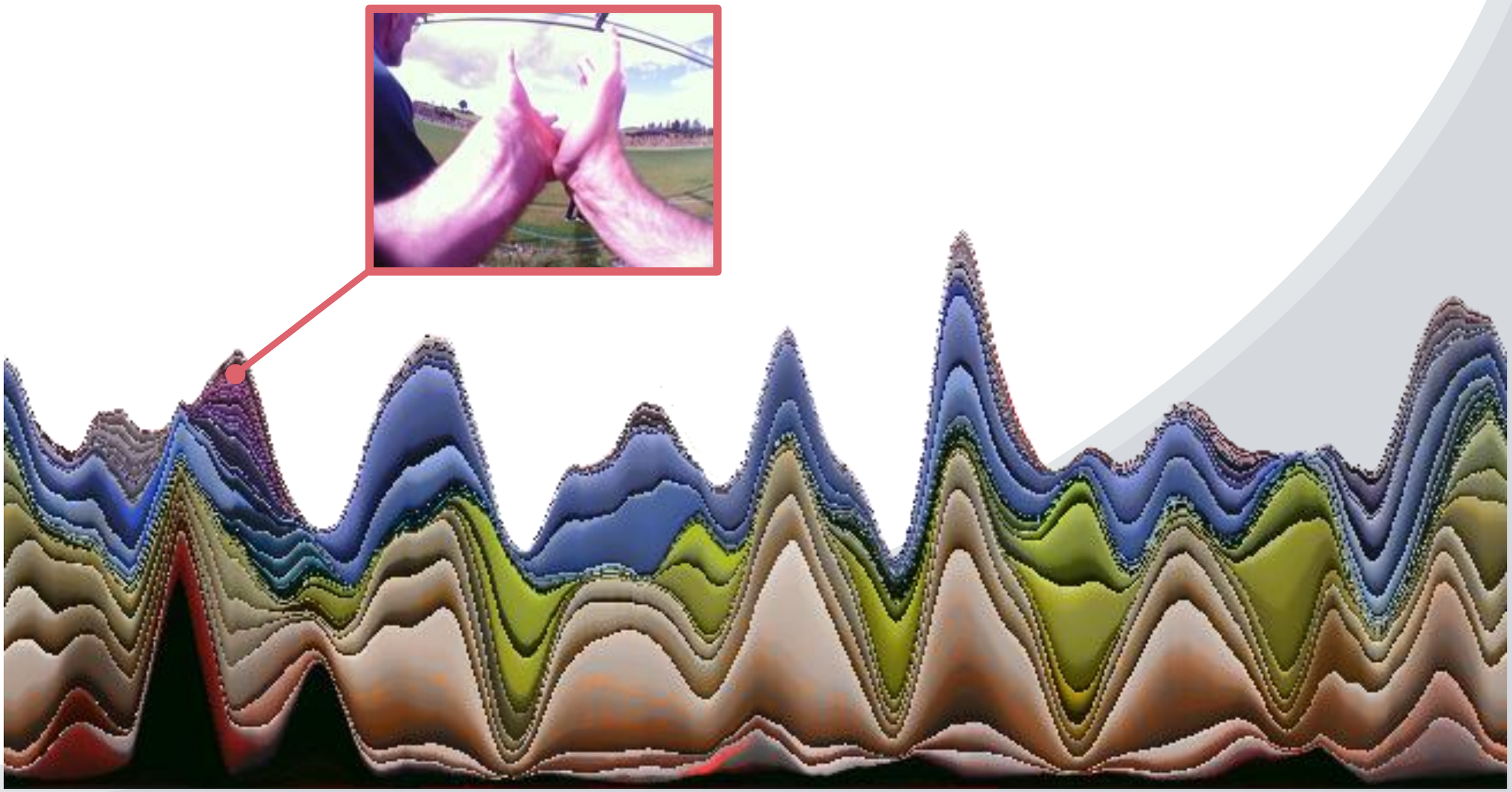
Information Retrieval

Interactive Point and Click Retrieval



Information Retrieval

Interactive Point and Click Retrieval



Information Retrieval

In this work, we build an interactive image browsing tool based around the Colour of Life visualisation

- **Exploit the use of high resolution multi-touch display walls**
- **Extend the Colour of Life algorithms to produce an intuitive visualisation, which incorporates image mosaicing**
- **Incorporate coarse lifestyle data with more fine detailed contextual information on human activities into one interactive visualisation tool**

Multi-touch Wall

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Multi-touch Wall

Large (3m x 1m)

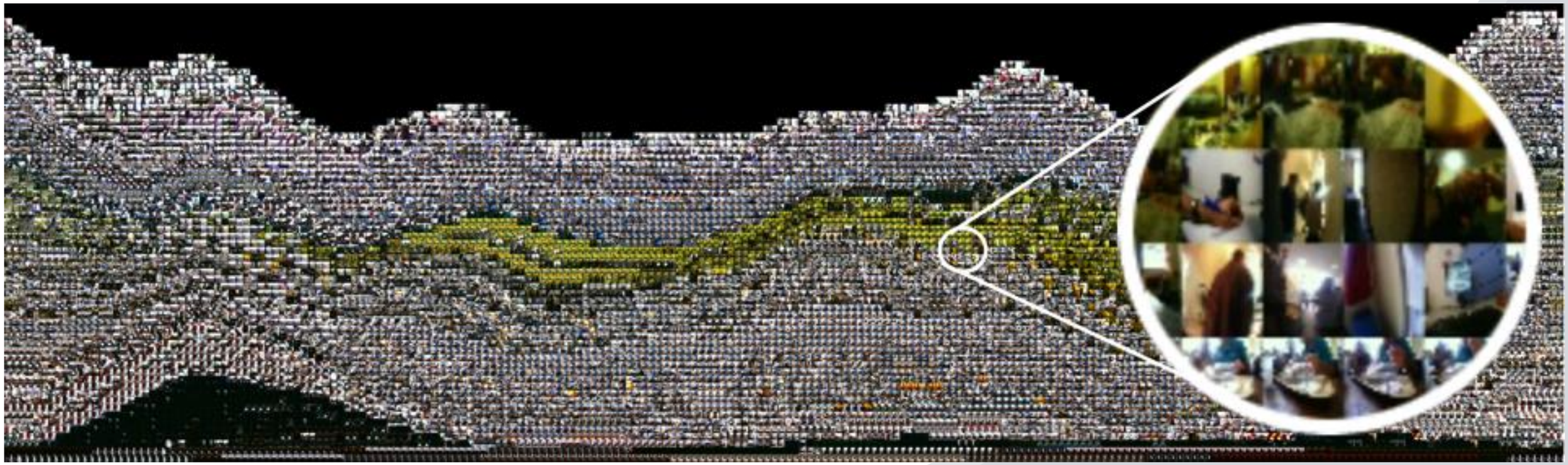
High resolution (5400 x 1920)

- **Can leverage the large size and resolution for displaying for huge amount of images**

Multi-touch screen

- **Make Colour of Life an “Interactive Visualisation” where images can be enlarged by the user**

Colour Of Life Image Mosaicing



Conclusions and Future Work

Investigate the use of image classification within the framework of the Colour of Life

One such example is the categorisation of images as being as social (i.e. interacting with other people) or non-social

Using such a classification, we can depict a person's social lifestyle, and how that varies over time.

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