University of Venice Ca’ Foscari

SOCIAL NETWORK ANALYSIS

*Sentiment analysis of Twitter users*

MARCH 2023

Authors:

Jinpeng Zhang 886854

Samuel Takyi Oben 881431

Index

[1. Introduction 3](#_Toc129419279)

[1.1 Context 4](#_Toc129419280)

[2. Queries 5](#_Toc129419281)

[3. Data Analysis 5](#_Toc129419282)

[3.1 Data collection 5](#_Toc129419283)

[2.2 Analyzed events 6](#_Toc129419284)

[3.3 Data elaboration 6](#_Toc129419285)

[3.4 Sentiment Analysis 6](#_Toc129419286)

[3.5 Data visualization 6](#_Toc129419287)

[4. Conclusions 6](#_Toc129419288)

# 1. Introduction

This report will detail the behaviour of users on a social media platform after witnessing actions committed by members of a certain social movement regarding the climate crisis, and then observing opinions regarding it. The movement in question is fighting to disseminate a warning message to as many people as possible who are willing to listen. Recently, activity has increased due to a single event that led to the spread of similar behaviour by other members of the same movement, resulting in an increase in online searches and discussions about it.

Especially in recent times in Italy, we have heard a lot about Just Stop Oil, a movement that has been around for some time in Great Britain, where climate activists vandalize works of art in museums to attract the attention of as many people as possible. The goal is to ensure that the government commits to stopping all authorizations for the development, export, and production of fossil fuels and climate change.

Many famous painters around the world have been targeted by young activists from environmental groups such as Just Stop Oil, Extinction Rebellion, and Ultima Generazione (an Italian group). These groups of young people stage demonstrative acts in defense of the environment and our planet. They demand that science and the words of climate scientists be heard.

The first work of art targeted with a cake was Leonardo da Vinci's Mona Lisa, housed at the Louvre Museum in Paris. At the National Gallery in the British capital, activists glued themselves to John Constable's painting The Hay Wain, causing minor damage to the artwork in this case. They then targeted the Botticelli Room at the Uffizi Gallery in Florence, where they hung a banner reading "Ultima generazione, No Gas No Carbon," before gluing themselves to Botticelli's painting "La Primavera."

In most cases, these are not demonstrative acts aimed at damaging works of art, but rather to destabilize, create discomfort, and provoke reactions to talk about such a delicate issue as climate change.

Activists have realized that art, for us, represents a weak point to provoke our reaction, as they are objects of inestimable value, created by artists who lived centuries ago.

## 1.1 Context

After observing these events, caused by representatives belonging to various movements that fight for climate change and above all to spread a warning message to the whole planet, we have noticed a strong growth in research regarding these events. We will analyze how these events have affected users of a social platform through the analysis of Twitter using the API (Application Programming Interfaces, that is the programming interfaces of the applications) provided by the company to determine if they have had a positive or negative impact on the general public.

The events considered for the analysis are crimes committed in the months of October/November/December 2022 and the countries considered for the analysis are: Italy, United Kingdom, Germany, France, Spain, and the United States.

The environmental protest actually started on May 29, 2022, at the Louvre in Paris, where the Mona Lisa by Leonardo da Vinci was targeted and hit by a man dressed as an old lady with a cake. He was subsequently detained in a psychiatric hospital.

In July, a series of English museums were targeted by Just Stop Oil, including the Courtauld Gallery in London, the Kelvingrove Art Gallery in Glasgow, the Manchester Art Gallery, and the National Gallery in the capital, where young activists glued themselves to a John Constable painting, causing minor damage.

In Italy, in July, a protest took place in the Botticelli room of the Uffizi Gallery in Florence, with activists gluing themselves to the glass protecting the painting of La Primavera. At the end of the month, Ultima Generazione activists attacked the Museo del '900 in Milan and glued themselves to the structure supporting Umberto Boccioni's sculpture Forme uniche della continuità nello spazio.

In October, they targeted Vincent Van Gogh's Sunflowers, kept in London, with tomato soup. Monet was also targeted by Ultima Generazione activists at the Barberini Museum in Germany.

On October 27, Vermeer's painting Girl with a Pearl Earring exhibited in the Mauritshuis Museum was hit. Two members of Futuro vegetal glued themselves to the frames of Francisco Goya's paintings at the Madrid museum.

Fortunately, these works were protected by glass, so all the paintings affected showed minor or no damage.

# 2. Motivation of our research

Sentiment analysis regarding individuals who damage works of art is an important research for several reasons. Firstly, works of art are a cultural and historical heritage that represents a significant part of our identity and history. Damaging them is a crime that goes against our cultural and historical heritage. Secondly, sentiment analysis can provide useful information to prevent these acts of vandalism and protect works of art for future generations. For example, sentiment analysis can identify the feelings and opinions of individuals about the protection of works of art, and this information can be used to formulate more effective policies and improve public education. Additionally, sentiment analysis can help to understand the motivations behind vandalistic behavior and find solutions to prevent it. In summary, sentiment analysis regarding individuals who damage works of art is an important research to protect and preserve our cultural and historical heritage.

The motivation behind acts of vandalism that damage such important works must be equally important to them; in fact, the reason behind their actions is the spread of policies against environmental pollution and the prevention of such a crisis.

The climate crisis is a very current topic that will have an important impact on future generations but is not always at the center of discussions on online platforms, despite everyone knowing how critical the current situation is.

For psychological reasons, the problem of global warming is not often discussed even though we are aware of it.

According to psychologist Espen Stoknes, there are five reasons why the fight against climate change involves little people:

The temporal and spatial distance of the negative consequences of climate change;

Destiny, we perceive it as an inevitable thing;

Dissonance between what we do every day and what we know we should do;

Denial of the problem, which comes naturally to us when we do not want to feel responsible;

Cultural identity and political values that in people with conservative orientation lead to rejection.

# 3. Queries

# 4. Data Analysis

## 4.1 Data collection

The data has been collected through the SNScrape library suggested by our professor; since the API given to us is not able to search for tweets older than 7 days we had to scrape old tweets.

The data we collected was not random but we followed a criteria:

1. First we needed to decide which events to analyse
2. After finding the events we had to determine the day they took place
3. Collecting tweets using specific keywords and hashtags 15 days prior to the event and 15 days after

With this kind of data collection we can take a better look at how the users were talking about the interested topic before and after the event.

## 4.2 Analyzed events

## 4.3 Data elaboration

## 4.4 Sentiment Analysis

## 4.5 Data visualization

# 5. Conclusions