**Project 2: Narrative Visualization**

CS-416 Data Visualization (Summer 2022) - Prof. Hart

By Sanjay Athreya ([ssa5@illinois.edu](mailto:ssa5@illinois.edu))

# Essay

## Description of dataset:

The public data set used for the visualization is bitcoin price collated from Yahoo and other related websites. The data is then subsequently cleaned, queried to identify drawdowns. Using the watermark a cycle is determined and then marked as such. The data was cleaned / formatted in python and excel.

# URL

Webpage: <https://sanjayathreya.github.io/athrsa.github.io/>

Repository : <https://github.com/sanjayathreya/athrsa.github.io>

## Messaging:

The narrative visualization aims to communicate the **various boom-bust cycles that bitcoin has experienced to date**. To date, bitcoin has **sold off more than 50% about 5 times** but excepting for the most recent sell off which is still underway, **it has managed to recover and push past beyond its all-time highs**. This is essentially what the charts depict.

It has experienced a dramatic growth since its inception in 2009. The price action and time period of the cycle can be explored more by clicking to drill down further. These 5 cycles are labelled for visual ease and to guide the user at the all-time highs. In addition to the charts, a text paragraph adds more description about the cycle.

## Narrative Structure:

The visualization follows a drill down story. There is a high-level overview in the first chart - bitcoin cycles and an option for the user to learn more about each of these cycles and price action by clicking into the line chart which then opens a second chart. (Price action). It is a bit more of free form interface. This is fairly similar to the NY times bear market drill down story as seen in the lectures.

## ****Visual Structure:****

**Visual structure is used for each scene**

The visual structure used for each scene is **user driven**. The main chart consists of a listing of the various sell off cycles bitcoin has experienced. The scenes are **labelled in ascending order** to **guide the user** in terms of order / time in which each of these cycles occurred. They are only a visual guide.

Once a user clicks into a specific scene the user can **see more details** of price moves being articulated and text explanation with a second chart. The visualization maintains **a consistent visual platform**, changing only **the content within each panel while leaving the general layout of the visual elements intact**, **ensuring the viewer can understand the data and navigate the scene:**

**The first chart (“bitcoin cycle”) explains percentage of price moves** by number of days but the **drill down chart** (“price action”) is a similar plot with **price vs. date-time further adding more detail on a timeline.** The text accompanying these charts also change when navigating scenes. Each **new scene alters the shape of the supplementary chart with a transition animation**.

The **general layout such as color schemes and shapes of the charts are consistent. (**Labels, pop up text, lines on the graph are the same**)**

The message is communicated through the interaction with chart with the annotations and graphic elements in the bottom panel and accompanying text, each enriching the narrative **through multi-messaging.**

**Urge the viewer to focus on the important parts of the data:**

Although the charts are all starting with the same color, when the user draws closer to a point the scene being looked at is highlighted and brought to the front **with a tool tip pop up of price and red circle**. There is also an **annotation highlighting main events.**

**Transition to other scenes, to understand how the data connects to the data in other scenes:**

When user clicks / drills down into a scene in the first chart, the second uses **d3 transitions as an animation** to help user understand the **state change and data being changed in each scene.** There is also accompanying text that also highlights the selection of the user.

## Scenes:

**There are 6 scenes** being depicted in the visualization. **The first scene is the entire overview of all boom-bust cycles.** There are **5 other scenes** for a user to be able to **seek further information** on each of these cycles by means of a drill down.

In the first chart, the drill down scenes are **labelled from A to E in ascending order** to be able to guide the user the time of occurrence of each of these events or in other words they are **sorted chronologically.**

## Annotations:

The main annotations in the scene are **to describe the scenes themselves** also the **recovery of bitcoin to its all-time high.** It highlights the current level in terms of cycle.

The annotations **follow a consistent template with a red bubble to call** out the event **and then a legend accompanied by further details.**

**These annotations do not change within a single scene.**

## Parameters:

## Parameter: Each scene the parameter for narrative visualization is the identifier for the bitcoin boom-bust cycle. This cycle or specific line is the scene identifier variable.

## States: When a particular line (scene) is selected, the date range and prices used to graph the second chart i.e., price versus date (“price action”) is narrowed down for plotting. When the reset button is hit then data (state) is expanded to entire possible range in the “price action” chart.

## Usage of Parameters: When no drill down is chosen the entire data set is used to visualize the data. When a particular cycle is chosen, then the dates and prices (entire data) is filtered to represent the data in the second drill down chart.

## **Triggers:**

* **On click for change in state:**  When the user clicks on the first chart (“bitcoin cycles”) the data being selected for a visualization is the filtered data set.
* **Affordances:** In the “bitcoin cycles” chart, when **the pointer moves near a cycle the nearest cycle highlighted as a hint**, which changes its color to black and is brought to the front. The reset button also is highlighted when the pointer hovers over it.
* **The option to click is mentioned in the chart**. There is also a hint to reset data filter in the second chart the state to entire data set.

# The Grading Reference

###### **A. What is the URL of your narrative visualization?**

1. **[1 point]** Does the URL connect to a functioning web page?

###### **B. Upload a PDF file essay describing your narrative visualization as required by the assignment instructions.**

1. **[5 points]** Does the essay state what messaging was intended by the narrative visualization?

###### **C. Narrative Structure**

1. **[2 points]** Does the essay indicate which structure the narrative visualization was designed to follow (martini glass, interactive slide show or drop-down story)?
2. **[3 points]** Does the narrative visualization follow that structure?

###### **D. Visual Structure**

1. **[2 points]** Does the essay indicate what visual structure is used for each scene?
2. **[1 point]** Does the essay indicate how the visual structure ensures the viewer can understand the data?
3. **[1 point]** Does the essay indicate how highlighting is used to get the viewer to focus on the important parts of the data in each scene?
4. **[1 point]** Does the essay indicate how the visual structure helps the viewer transition to other scenes, to understand how the data connects to the data in other scenes?

###### **E. Scenes and Visual Ordering**

1. **[2 points]** Does the essay identify the scenes of the narrative visualization?
2. **[1 point]** Does the essay discuss ordering (e.g. the order of elements in a chart or the ordering of scenes)?
3. **[2 point]** Do the charts used as scenes effectively present the data?

###### **F. Annotations**

1. **[2 points]** Does the essay discuss annotations?
2. **[1 point]** Does the essay discuss a template for the annotations?
3. **[2 points]** Are the annotations in the narrative visualization effective and consistent?

###### **G. Parameters and States**

1. **[1 point]** Does the essay identify the parameters of the narrative visualization?
2. **[1 point]** Does the essay identify the states of the narrative visualization?
3. **[1 point]** Does the essay indicate how are the parameters are used to define the state and each scene?
4. **[1 point]** Does the narrative visualization use parameters to control its state?
5. **[1 point]** Does the narrative visualization use parameters to control each scene?

###### **H. Triggers**

1. **[2 points]** Does the essay indicate the triggers that connect user actions to changes of state in the narrative visualization?
2. **[1 point]** Does the essay indicate what affordances are provided to the user to communicate to them what options are available to them in the narrative visualization?
3. **[1 point]** Does the narrative visualization implement and respond to user events properly?
4. **[1 point]** Does the narrative visualization make any effort at all to communicate what options are available to the user?