

THE EXPLODING TWIT BIRD: TWITTER BLOWS UP A BIRD

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ABSTRACT

In this paper, the author presents the Exploding Twit Bird, a project that maps the frequency of tweets around a topic or person to the size of the body of a physically constructed bird. The project's inspirations, implications, construction, interaction, user feedback and future developments are all discussed.

Keywords

Twitter, Arduino, PHP, Processing, Interactive Sculpture, Data Visualization, Social Media.

INTRODUCTION

The Exploding Twit Bird is an interactive sculpture that utilizes a PHP script to access Twitter's Application Programming Interface (API) [1] to count the frequency of a keyword's use in the past week and add a multiplier to translate it to milliseconds. The Exploding Twit Bird then visualizes that number using a Processing script, an Arduino Uno circuit board, and an air compressor to inflate a bird's body for one to one hundred twenty seconds (two minutes), based on the popularity of the keyword. If it is very rare, the bird's body only inflates for a moment. If the search term is very common, or 'over-tweeted,' then the bird's body will inflate to absurd dimensions, ultimately exploding from its own pressure.

INSPIRATION

There are many interesting visualizations of Twitter, although most focus on following a specific user. For example: Pete Prodoehl's Twitter Monkey that waves its arms whenever the assigned user posts a tweet. [2] An interesting visualization that tracks tweet volume around a user or discussion topic is the TwitBalloon project by

Alexander Weber and Marcus Nowotny, a race between two Twitter search terms. [3] While both projects are compelling, the author's interest was in making an object with an inherently critical perspective. Two such projects are @Twitter by Yahui Gu-Fiorella that allows the user to "Shoot the *Twitter Gun* to prevent you from being bombarded by annoying Tweets, [4] and the "Tweet Stalker" project that the author created in November 2010 with Lady Gaga and a classmate, Alvaro Soto, PhotoShopped into a wedding bride-and-groom photo. Whenever Lady Gaga tweets, her face will glow, and a red heart will beat in Alvaro's chest. [5]

After reviewing these and numerous other visualizations online, the author chose the following aims for his Exploding Twit Bird:

- A visualization that tracks the *volume* of tweets—something that the TwitBalloon does very well,
- An attractive and compelling visual identity, as seen in the Twitter Monkey, and
- A strong critical aspect, as seen in the @Twitter and the Tweet Stalker projects.



Figure 1. The Exploding Twit Bird, in the process of inflating to the most recent Tweet starting with "@explodingtwit".

CONCEPT

After reviewing the aforementioned projects and others, the author envisioned the Exploding Twit Bird. The concept: using a balloon to form the body of a balloon, the author

could program an Arduino circuit board to control an air compressor that would inflate the balloon to a size determined by the recent popularity of a given search term. The Exploding Twit Balloon could be set to measure tweet frequency of tweets about a topic, a user, or tweets by a single user. This could be done through Twitter itself: all a user need do is to create a tweet starting with “@explodingtwit” followed by a space and a search term. For example, if a user wants to visualize the frequency around “#shootmeintheface” s/he could simply log into Twitter and type “@explodingtwit #shootmeintheface” and press a button. The balloon would inflate for 8-9 seconds, based on the 38 tweets including “#shootmeintheface” within the past week (as of the writing of this paper; the results change with time). Using such a visualization could allow users to see what topics are of the most value to the people posting on Twitter, and begin conversations around the things that are currently being discussed on Twitter.

The original concept of the Exploding Twit Bird envisioned the bird perched atop a central processing unit (CPU), with a giant universal serial bus (USB) cable feeding it. [Figure 2] After further consideration, however, the idea was adjusted to the slightly more poetic metaphor of a bird perched atop a cloud, still with a USB cable feeding it.

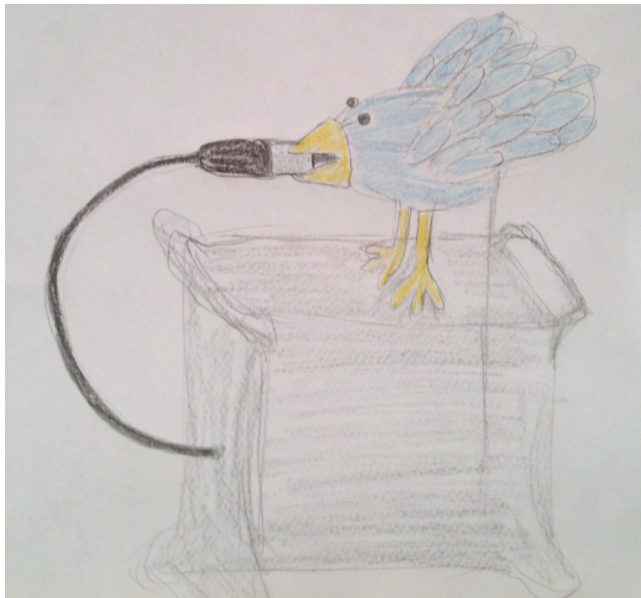


Figure 2. Original concept drawing of the Exploding Twit Bird. Perched atop a CPU, it inflates via the air compressor cable, disguised as a giant USB cable.

IMPLICATIONS

The Exploding Twit Bird has several implications. It has a clear (and somewhat biased) point of view, addresses the use and overuse of Twitter by many people, and has ability to spark discussions around the topics we choose to discuss.

The project's point of view is clearly—and intentionally—biased. One need only look at the use of “Twit,” which can be defined as “a person regarded as foolishly annoying.” [10] Furthermore, if a search term is tweeted too often, it will make the bird explode. This very fact implies that there is such a thing as ‘over-tweeting.’ There is such a thing as

discussing a topic or person too often, and such a thing as sharing too much about one's life and/or personal opinions. At the same time, there is such a thing as ‘under-tweeting.’ By being unengaged, one does not inflate the Exploding Twit Bird at all. This implies a weakness or non-functionality behind not tweeting at all. Ultimately, the Exploding Twit Bird requires a delicate balance to have normal, non-exaggerated proportions when it is activated.

There is also a large portion of society that is still struggling to get a handle on Twitter and its impact on society. That said, it is clear to everyone that it has an impact on society. Many worry that constant micro-blogging destroys our ability for extended thought, long-range focus, and breaks language down into bad abbreviated spellings and acronyms. For them, there is a joy in seeing Twitter data cause a balloon to explode. It is a bit akin to the joy derived from Yehi Gu-Fiorella's @Twitter project, in which users get to shoot down meaningless tweets. [4]

Lastly, because society is still struggling to understand how Twitter is changing communication structures, the project simply works to spark discussion around the topics that people discuss, the impact that the discussion might have, and what Twitter posts say about the things that the users value. Why do people discuss some topics more than others? Does that reflect social values? Is there a mismatch between what the user thinks s/he cares about, and what s/he actually discusses online?

IMPLEMENTATION

The implementation of the Exploding Twit Bird can be divided into three sections: Code, Physical Construction, and Testing the Inflation Parameters.

Code

The code for the Exploding Twit Bird was composed of two scripts, written in PHP and Processing. The PHP script used the “SimpleTwitter Example” by Tomaž Muraus [6] as a base for grabbing available tweets, upon which numerous modifications were made to pull all available tweets, count them in an efficient manner, and apply a multiplier to the number of tweets in order to output the number of milliseconds that the compressor would be powered by Arduino. Twitter allows a maximum search draw of 1500 tweets, and only allows searches of tweets made in the past week. Thus, any search will count at most 1500 tweets. As this is the absolute maximum that Twitter allows its users to see, the author decided that this was certainly worthy of exploding the Twit Bird. In fact, the author after testing with various words that a thousand tweets would be worthy of exploding the bird: after all, once there have been 1000 tweets about a topic—of less than 140 characters—in a single week, the topic is sufficiently watered down that it can be quite easy to be overwhelmed by the sheer volume of entries (in the author's opinion, at least).

The Processing script utilized and modified connection and web-scraping code written by Liz Rutledge for her Tweet

Alert, [7] a project that was developed alongside the Tweet Stalker for a collaboration around connecting Twitter and Arduino. With the Arduino Firmata library [8] uploaded to the Arduino Uno, the Processing script ‘listens’ for a button signal feeding into the circuit board. When the button is depressed, the Processing script loads the PHP script posted at <http://a.parsons.edu/~rorak586/twitbird/> and copies the number of milliseconds that the PHP code outputs, and then turns the air compressor on via the Arduino circuit board and a relay.

Physical Construction

The following materials went into the construction of the Exploding Twit Bird:

- 1 Arduino Uno circuit board,
- 30-gauge wire (for wiring of the button and relay),
- 1 wire-wrapping tool
- 2 resistors, at least 220Ω
- 1 momentary pushbutton,
- A two-prong extension cord (optional),
- 1 solid-state relay, Sharp model number S201S05V,
- Half-inch foam core, (cloud)
- Quarter-inch-thick foam core, (wings)
- 2 bags of “Buffalo Snow,” (fluffy cloud surface)
- Approximately 30 party balloons (used on wings, like feathers)
- 1 Black&Decker Air Station model number ASI300,
- Extension piece that is sold with the air compressor and comes mounted on the bottom,
- 1-2 wire clothes hangers, (used to mount the wings and eyes)
- 2 clothing buttons, (for the eyes)
- Hot glue gun and hot glue sticks,
- Soldering gun and solder,
- Double-sticky tape,
- Black matte board, (USB)
- A section of metallic bubble wrap building insulation that can be found at a basic hardware store, (USB)
- Two 7.7 x 4.2 x 1.5” sponges, (feet) and
- One 6 x 3.6 x .9” sponge. (beak)
- A couple of spare small cardboard boxes
- A few cable ties. (Home Depot carries light blue ones)

One can divide the construction process into three parts: the circuit, the bird, and the cloud.

The Circuit

The circuit for inflating the bird consists of a basic button circuit [9] [Figure 3] and a simple circuit wiring the two control pins of the relay from an output pin on the Arduino board to ground (with a resistor in there, as well). The

author then cut *only one side/wire* of a two-prong extension cord, stripped a ¼-inch section of wire on either side of the cut and pulled the two wires apart to get some slack, and then soldered the two leads to the alternating current (AC) terminals on the relay. This allows the Arduino to control when current is sent to the compressor (which is plugged into the extension cable. The relay allows for power to flow through the cable to the compressor *only* when a signal is sent through the control circuit.

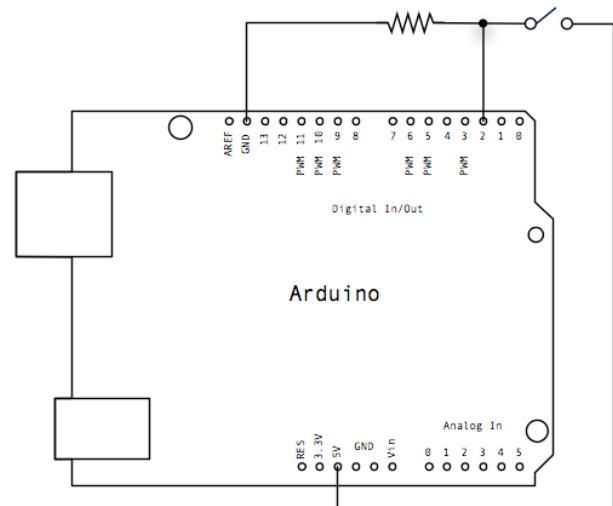


Figure 3. Diagram of a simple button circuit, as found on the Arduino examples webpage. [9]

The Bird

The feet of the bird were cut from the two large sponges, with the square legs cut from one end of each large sponge and hot-glued on. A hole is drilled into the front-most toe to allow a place to mount the momentary push button, with its wires extending through/beneath the foot. The beak pieces were made from the smaller sponge, which was cut in half through the .9” to make two approximately 1/2-inch thick sponges. These were then each folded into a funnel shape so that one long edge was folded in half to meet itself, hot-glued, and allowed to dry. Once dry and completely rigid, the sponges were cut to form the top and bottom of the beak. Two short pieces of wire from the hangers were inserted into the top beak section and hot glued in place, with an eye hot-glued to the opposite end. The wings were made from ¼-inch thick foam core, covered in double-sticky tape, with balloons pressed onto both sides as feathers. This is relatively reliable (the wings can be shaken thoroughly without losing balloons) but is also temporary, so that users can pull a balloon off of a wing to replace popped balloons. Each wing has a straight section of wire inserted through the middle for mounting.

The base of the USB connector was constructed from black matte board, and the ‘metal’ part of the connector was constructed from the metallic insulation, with a few pieces of ¼-inch foam core inserted with hot glue to give it a more rigid shape, since the insulation is very pliable. Some scraps of white foam core were glued to the base as well, to raise it above the cloud. The beak pieces are attached to the opening of the USB connector with hot glue, and the air

compressor cable/valve were inserted and hot-glued in place to inflate balloons at the mouth opening. Lastly, the extension piece is used with the air compressor to increase the reach of the valve. Hot glue is applied evenly around it to build up the width so that the balloon makes a tight connection. The balloon is then attached to the extension, with a cable tie slipped over its nozzle to prevent it from expanding so much that the balloon flies off of the air compressor.

The Cloud

Two clouds are cut from the ½-inch foam core, and one bag of “Buffalo Snow” is divided in half, stretched across the two clouds and glued to the surfaces. A couple of supports are made from foam core scraps and glued to the back. The small spare boxes form platforms behind the clouds—one for the feet and wings, and one for the air compressor. The wings are mounted by affixing the hanger wire to the box at an appropriate height to match the height of the beak. The compressor is draped/hidden with the buffalo snow, with the USB cable (and attached beak) emerging out of the snow. The feet are placed atop the snow, as well, with button wires going through the front toe, to the Arduino board that rests below the Buffalo Snow.



Figure 4. The Exploding Twit Bird on the verge of exploding to the search term “#sarahpalin”.

USER FEEDBACK

User feedback was very positive. Many people found excitement and joy in the potential drama of causing the bird to explode. Users were also intrigued to know how many tweets would explode the bird. Because that information was not posted with the bird, there was a certain mystery surrounding it.

Interestingly, when asked how many tweets should cause the bird to explode, users had different responses. Some thought it should be rather common, whereas some thought that it should be extremely rare. Many users also recognized a difference between different Twitter accounts, that some accounts have valuable information such as news articles, while other accounts simply post meaningless updates or have public 1-to-1 conversations using @ tags. Thus, many people were undecided when asked what it means to ‘over-tweet,’ and numbers they suggested were spread across a range of values. For a single Twitter

account, people suggested that anywhere from 10 to 25 tweets per day was too much. Because the author is biased in favor of fewer tweets, he chose to explode the bird at 11 tweets per day, or 77 tweets in a week. At 11 tweets per day, a user is typing up to 1540 characters, or approximately 300 words per day. At this point (in the author’s opinion), for *most* users a blog would be a more effective way to create meaningful daily posts.

There was a request to include a tweet display to show what tweet is being used to expand the balloon. This is a relatively simple adjustment that the author will gladly add into future iterations. There was also an interest in creating a battle of some sort, along the lines of the TwitBalloon project [3]. The author has some ideas for such an iteration, which is detailed in the following section.

CONCLUSIONS AND FUTURE DEVELOPMENTS

The Exploding Twit Bird is an early prototype, and a great starting point for commentary on the use of Twitter, but much can be done to develop its image and styling, *or* much can be done to sharpen the project’s direction by choosing a more specific point of view. The author chose the image of a bird in order to create a visualization that could represent all of Twitter—an image that was not specific to any single topic. A future possibility for the project, however, would be to use the same concept of balloon inflation with highly specific imagery. For example, one large-scale idea that the author has is to play with the idea of the Twitballoon’s racing and apply it to presidential candidates. Imagine the entire race of presidential candidates made from paper maché, each one containing an air compressor that feeds a balloon head. They sit at computers, their hands on keyboards, and each screen displays their Facebook and Twitter accounts, constantly updating to match what they and their political allies post via social media. Perhaps they even get a couple of seconds of inflation for every ten @mentions. Meanwhile, a very very slow leak releases air from their balloons. Each candidate walks a fine line. S/he must use social media in a balanced manner. Over-exposure results in the media ignoring posts to social media sites, while under-exposure doesn’t get them enough headlines. In the end, is it the balance user who wins the election? Is there a clear correlation between candidates’ use of social media and their successes and failures? A room filled with the steady hiss of deflating heads, punctuated by occasional bursts from air compressors, always permeated by the curiosity: will anyone’s head explode? What are they talking about. Spectators, can walk around, see their social media posts, and get a sense for who they are, and how social media plays into their campaigns.

Meanwhile, as the author works more with digital designs, he looks to see how he can translate the drama of a physical project like the Exploding Twit Bird into a digital medium. What can surprise us in a joyful, fun way while we surf the web? How does the drama of an exploding balloon translate to a strictly digital medium?

Finally, the author is also looking to offer true solutions and alternatives to the same concerns that inspired the Exploding Twit Bird. Although commentary can play a very valuable role in society, the author's ultimate interest is to develop real solutions and positive alternatives to the problems found in today's increasingly segmented, digital world. It is a challenge to raise awareness of a problem, but it is another (and more difficult) task to offer viable alternatives to the current way of life. It is the act of seeking such alternatives, however, that defines the direction that the future will take.

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A FINAL NOTE

To give a sense of perspective: If the entire text of this paper were to be published on Twitter, it would require a total of 143 status updates.

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