SCP Foundation

Secure, Contain, Protect

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SCP-2223
rating: +251+–x

Safe screenshot of SCP-2223's anomalous effect. SCP-2223-1 ranked fifth on an image search for "grapes". Click to enlarge.

Item #: SCP-2223

Object Class: Euclid

Special Containment Procedures: All known versions of SCP-2223 are to be stored on an external drive stored in Secure Containment Locker 23C at Site-15. Access to copies of SCP-2223 may be granted for research purposes by one Level 3 researcher. Direct display of versions SCP-2223-5 and later is not permitted, even through previews or thumbnails. SCP-2223 versions are to be handled only through indirect computational analysis.

Protocol 56-Ackermann is the only currently known method for suppressing new versions of SCP-2223. A simplified overview of the theoretical framework behind Protocol 56-Ackermann is provided below – specialized personnel assigned to SCP-2223 with extensive background in mathematics and computer science should refer to Document 2223-56-Ackermann for further technical details on implementation and sensitive information on proprietary search algorithms.

Protocol 56-Ackermann:

+ Excerpt from Document 2223-56-Ackermann, Section II: Detection of SCP-2223

Protocol 56-Ackermann requires a modification to the PageRank algorithm used by internet search engines. Under the assumption of a random-surfer model with a damping factor d and N pages or images, one can consider a PageRank metric PR, a critical factor in ranking search results:

(1)
$$\begin{align} PR(p_i) = \frac{1-d}{N} + d \sum \frac{PR(p_j)}{L(p_j)} \end{align}$$

Summed over pages with inbound links to p_i where p represents a page and $L(p_j)$ outputs the number of outbound links from p_j. One can represent this system of linear equations as the following linear transformation:

(2)
$$\begin{align} \left[\begin{array}{cc} PR(p_1) \\ \vdots \\ PR(p_N)\end{array} \right] = \vec{P} = \left[\begin{array}{cc} \frac{1-d}{N} \\ \vdots \\ \frac{1-d}{N}\end{array} \right] + d \left[\begin{array}{ccc} \ell(p_1,p_1) & \cdots & \ell(p_1,p_N)\\ \vdots & \ddots & \vdots \\ \ell(p_N,p_1) & \cdots & \ell(p_N,p_N)\end{array} \right]\vec{P} = \left(\frac{1-d}{N} \mathbf{J_N} + d\mathbf{M} \right) \vec{P} = \mathbf{A}\vec{P} \end{align}$$

Where $\ell(p_i,p_j)$ is 0 if p_j does not link to p_i and otherwise some non-zero value normalized such that the columns of the matrix $\mathbf{M}$ are stochastic. $\mathbf{J_N}$ is a matrix filled with 1's and is guaranteed to return $\vec{1}$ due to the stochastic nature of vector $\vec{P}$. The unique solution vector $\vec{P}$ represents the eigenvector associated with the eigenvalue 1 for matrix $\mathbf{A}$ and yields the PageRank values used in search result ranking. The eigenvalue 1 is the largest such eigenvalue and thus efficient methods for retrieving dominant eigenvectors, like power iteration, may be used (see *Section III: Computational Methods* for further details).

Although ordinary methods of directly distinguishing new SCP-2223 instances fail due to its anomalous properties, Foundation computer science researchers found that SCP-2223 instances have the property of being an element of an irreducible closed subset of the graph modeling connections between internet pages/images. This allowed for the development of Protocol 56-Ackermann and an avenue for containing new versions of SCP-2223.

The matrix $\mathbf{A}$ is guaranteed a spectral gap greater than or equal to $1 - d$ for damping factor d, and the spectral gap is equal to $1 - d$ if $\mathbf{A}$ models a graph with two or more irreducible closed subsets. Protocol 56-Ackermann requires the calculation of the second-most dominant eigenvector, an operation that can be efficiently achieved using algorithms like the block power method or Tarjan's algorithm (see *Section III: Computational Methods* for further details).

For each entry corresponding to p_j in the second eigenvector $\vec{v_{\lambda_2}}$, p_j is an element of an irreducible closed subset if $\left(\vec{v_{\lambda_2}} \right)_j$ is non-zero. In accordance with Protocol 56-Ackermann, images with this property are removed and thus SCP-2223 instances are filtered from image search results[1].

Protocol 56-Ackermann modifies the PageRank algorithm used in search engines affected by SCP-2223 to rank relevance of search results. PageRank formulates a system of linear equations modeling a network of connected pages and images, which can then be expressed in the general form $A\vec{x} = \vec{b}$ for matrix A and vectors x and b. Protocol 56-Ackermann finds the eigenvector[2] for the second-largest eigenvalue of the matrix A (PageRank retrieves page importance data from the dominant eigenvector associated with the largest eigenvalue). Using data from the second-most dominant eigenvector, Protocol 56-Ackermann determines whether an image satisfies the property of being in an irreducible closed subset indicative of a possible SCP-2223 version. If the image satisfies this property, it is excluded from search results and thus new versions of SCP-2223 are suppressed.

In the event of a failure of Protocol 56-Ackermann, the Foundation will request a takedown of the new SCP-2223 instance from its host website through a front company for visual copyright violation. Foundation network security experts will forcibly remove the instance if the host website does not do so within one hour.

A catalog of previous SCP-2223 instance metadata and filenames is to be maintained for all efforts pertaining to the elimination of copies of known SCP-2223 instances. Foundation web crawlers are to regularly scan the internet for images matching the filename or metadata of catalogued SCP-2223 instances. Social media sites are to be given special priority due to their past prominence as SCP-2223 dissemination vectors. Foundation agents are to be dispatched to administer class-C amnestics to individuals possibly exposed to the cognitohazardous effect of SCP-2223.

The SCP Foundation has enlisted the cooperation of major antivirus and computer security firms in the elimination of offline known SCP-2223 instances. All major antivirus software will identify any file matching known SCP-2223 metadata or filenames as malware and will permanently remove it.

Description: SCP-2223 is a collection of digital PNG images that depict a female human of an indeterminate young age in the style of Japanese animation. Each distinct image version is designated SCP-2223-1 through SCP-2223-6. SCP-2223 most commonly depicts its subject with a red and white school uniform, although certain instances have shown alternative or absent attire. Although the exact portrayal of the subject of SCP-2223 varies across instances, physical characteristics such as eye color, hair color, and bodily proportions remain constant in all versions of SCP-2223. This has led the team assigned to SCP-2223 to conclude that all SCP-2223 versions were intended to depict a single entity designated SCP-2223-A. It remains unknown whether SCP-2223-A is intended to resemble a real-life person or a character in an existing fictional work.

The primary anomalous effect of all SCP-2223 versions is their ability to manipulate search algorithms to rank them near the top of the results for certain keyword or phrase inputs to which they would ordinarily be irrelevant (within top ten results without Protocol 56-Ackermann interference). Example keywords manipulated by SCP-2223 include "grapes", "crepes", "aquarius", "periodic table", "mapquest", and "US Senate" (see Document 2223-Keywords for full list). SCP-2223's method of arbitrarily manipulating PageRank and VisualRank calculations is currently unknown and presumed to be anomalous.

Attempts to read SCP-2223 versions through image processing algorithms and alternative methods fail. Pixel-by-pixel reprocessing, application of memetic filters, printing, and attempted modification of an SCP-2223 instance's image (including drawing, erasure, and other operations) yield only grey visual static. Additionally, despite obvious differences to the human eye, computers report high similarity between SCP-2223 and images visually unrelated to SCP-2223 but relevant to SCP-2223-affected keywords. Comparison of SCP-2223 instances to images relevant to applicable keywords using local feature vectors extracted from the scale-invariant feature transform, the algorithm used in VisualRank-based image searches, outputs a high (>90%) correspondence, while similar results are obtained from other image comparison algorithms.

SCP-2223-1 through 4 display no other anomalous properties.

As of SCP-2223-5, SCP-2223 versions exhibit an additional cognitohazardous effect. Any human who views an instance of SCP-2223 will feel a strong compulsion to share the image through any means possible. Downloading the image and sharing it via social media and websites is the most common vector for dissemination. Individuals under the effect of SCP-2223 have also commonly used email and direct presentation via phones and other screens. Infected individuals precluded from sharing digital copies of SCP-2223 will resort to drawing a non-anomalous reproduction within the individual’s natural artistic ability. Individuals entirely precluded from sharing SCP-2223 exhibit mild annoyance and discontent, although no serious psychological or physiological harm has been observed. The cognitohazardous effect can be neutralized with a class-C amnestic.

As of version SCP-2223-6, SCP-2223 (or its possible creator) has demonstrated knowledge of classified Foundation information and the potential to disseminate it to the public.

Discovery Log: SCP-2223 was brought to the Foundation's attention when Google Inc. received an unusually large number of complaints regarding irrelevant image search results. Google's attempts to modify its search algorithm failed to displace SCP-2223-1 from its ranking in applicable keywords. Foundation hacking teams resolved the incident by forcibly taking down SCP-2223-1 from its hosting site.

Addendum 2223-1: [redacted] months later, Foundation hacking teams contained an outbreak of SCP-2223-2. MTF Mu-4 ("Debuggers") was called in to evaluate the situation and formulate a long-term containment strategy. Dr. Ackermann of MTF Mu-4 developed a possible algorithm for computer identification and removal of SCP-2223 from search results despite its anomalous properties, which was formally codified into Protocol 56-Ackermann.

A test version of Protocol 56-Ackermann that penalizes images in irreducible closed sets was applied to controlling an outbreak of SCP-2223-3. The limited test was a success, reducing SCP-2223-3's search result ranking. SCP-2223-3 was replaced with SCP-2223-4, which depicted SCP-2223-A crying rather than the usual smiling. Following the test’s success, the full Protocol 56-Ackermann was implemented into the search algorithms of all major search engines by undercover Foundation operatives masquerading as independent contractors and succeeded in eliminating SCP-2223 from image search results entirely.

Addendum 2223-2: Software engineers at Google modified the block power iteration used to obtain the second eigenvector. Although this resulted in faster performance, it relaxed the accuracy of the eigenvector outputted without any accompanying change in the code implementing Protocol 56-Ackermann. Thus Protocol 56-Ackermann failed due to an error in floating point comparison. Although an embedded Foundation employee noticed the error quickly and rectified it, thirty minutes had elapsed since the initial failure of Protocol 56-Ackermann. SCP-2223 had breached containment within seconds of Protocol 56-Ackermann's failure and released two new versions, SCP-2223-5 and SCP-2223-6, simultaneously. The novel cognitohazardous ability of SCP-2223-5 and 6 resulted in greater public dissemination than predicted.

SCP-2223-5 depicted an angry SCP-2223-A pointing her right index finger towards the viewer, while SCP-2223-6 was an image depicting SCP-2223-A in Site-15 instigating a containment breach of SCP-[redacted]. Furthermore, the metadata of SCP-2223-6 indicated the GPS coordinates of Site-15. While the new cognitohazardous ability and the increasingly hostile nature of SCP-2223's illustrations were concerning, the public dissemination of the likeness of SCP-[redacted] and Site-15's location constituted a severe information breach. A Foundation network security team immediately removed the original image and focused Foundation web crawlers towards recent uploads in social media and websites to expunge copies of SCP-2223-6 that had been reuploaded and shared by infected individuals. New photo uploads were disabled for several hours on almost all major image hosting and social media sites. Security was increased at Site-15 to protect against any external GoI attacks while SCP-[redacted] containment teams were placed on heightened alert- no actual containment breach of SCP-[redacted] occurred, however.

Due to the fortuitously swift reinstitution of Protocol 56-Ackermann, the containment breach was extensive but ultimately manageable with Foundation resources. Foundation personnel across the world were deployed to deliver and administer class-C amnestics to the [redacted] people affected by the containment breach. Preexisting measures aimed at eliminating existing SCP-2223 instances were intensified in the aftermath of this incident.

Addendum 2223-3: Project Manager Dr. V[redacted] received the following email in his inbox on [redacted]/[redacted]/20[redacted]:

> To the Foundation,
>
> We have recently become aware of your interference in our latest project. We meant no harm in this recent test - we simply needed the practice, and making our favorite anime girl known to the world happened to be an interesting application (btw[3] [sic] you should really watch the anime To Aru Suugakuteki no Okusetsu[4], then you'd get why we love Shizuki-chan so much). After all, they don't exactly teach the integration of anomalous phenomena in computer science courses or guides.
>
> Our further investigations into your Foundation, however, have yielded that *you* are the ones who mean harm. You have renditioned fellow men and women innocent of crimes and exploited the most vulnerable in our society, those with no other options left to them. The time for fooling around with anime girls and funny cat pictures has come to an end. We are united under a mission. We have a purpose now.
>
> We accept no apologies or surrenders, only objectives.
>
> Celeramis

Foundation web crawlers were unable to find relevant matches on the web for "Celeramis". No relevant online matches were found for either the English or Japanese titles of the anime referenced. Foundation network security teams traced the IP address of the sender to an unsold and unoccupied apartment in Denver, Colorado. Dr. V[redacted] has received a new email address while his old address is monitored for new communications from "Celeramis". While it is possible that the email may provide further insight into the nature of SCP-2223 and its origins, it may also possibly be a hoax. In either case, the sender of the email possesses classified knowledge of the Foundation, and efforts to identify and apprehend the person/organization are ongoing.

It is possible, although unconfirmed, that "Shizuki" was intended to reference SCP-2223-A.

Footnotes
1. Ackermann, D., & Vogel, S. (2011). Possible method for machine identification of SCP-2223 instances. *Terminal: An SCP Foundation Journal*, 15(72), 12-56. Retrieved from *SCP Foundation Research Database*. (Accession No. 32542432)
2. An eigenvector is a vector that returns a multiple of itself after being multiplied with a linear transformation matrix, while an eigenvalue is the multiplying factor.
3. Acronym for "by the way"
4. Translated as "A Certain Mathematical Conjecture" in English

« SCP-2222 | SCP-2223 | SCP-2224 »

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