

Fandomized Algorithms and Fandom Number Generation

Lindsey Kuper Alex Rudnick

School of Transformative Works, Indiana University
{lkuper, alexr}@cs.indiana.edu

Abstract

We introduce the concepts of *fandomness* and fandomized algorithms, discuss some of their applications, and demonstrate a practical fandom number generator.

Categories and Subject Descriptors Pairing/Characters [CS/fandom]; Rating [PG-13]

1. Spoiler warning

Fandomized algorithms make use of fandom numbers and fentropy to perform useful, or at least emotionally satisfying, computation. Here we discuss some of the most prominent applications for fandomized algorithms.

2. Fandomness and fandom variables

A *fandom variable* can take on a *fandom number*, but the generation of fandom numbers requires a source of *fentropy*. Thankfully, there exist fentropic processes in nature, and we can typically sample from them over the Internet. *Fentropy* is a measure of the fannishness of a fandom variable over time. Computing the exact fentropy of a fandom variable is in general MLP-hard, although approximations are possible. The world’s technological capacity to store and communicate fentropic information has increased since the advent of the information age, especially since Dreamwidth launched.

3. OTPs

OTPs are one of the most important applications of fandom numbers. In an OTP, a character is combined with another character from a secret fandom pad, the one with whom it truly belongs (mod 26). For characters c_1 and c_2 , we denote such a pairing as c_1/c_2 . If the OTP key material is truly fandom (sampling from /dev/ufandom, for instance, may be insufficiently fandom), the true love of an OTP has been proven impossible to break.

4. Markov fandom fields

We may also wish to do inference over communities of interacting fandom variables using a Markov fandom field and the *headcanon propagation* algorithm, although it is MLP-hard in most cases. However, we can perform approximate inference with loopy

headcanon propagation. Fandom-wanking is not guaranteed to terminate in this case, and a consistent community-wide headcanon may not emerge.¹

5. A practical fandom number generator

We have developed a practical algorithm and implementation for generating fandom numbers, which are a key component for any fandomized algorithm. Our fandom number generator is available at:

<http://github.com/lkuper/fandomized-algorithms>

A naturally occurring source of fentropy, *Archive of Our Own* (AO3), supplies an ever-increasing amount of fandomness, certainly more than the current global demand for fentropy to power fandomized algorithms.² As fandomized algorithms become more broadly deployed, further sources of fandomness may be required.

Our practical fandom number generator downloads a pseudo-randomly-selected transformative work from AO3, locates all of the base-10 numbers in it, and then returns one of them at fandom. If for some reason there are no fandom numbers present in a given transformative work, we simply try another transformative work until we find one.

This work would not be canon without the public availability of sources of fentropy; the open publishing and reuse rights of the transformative works on AO3 enable us to transform these transformative works into transformative works of our own.

6. Season finale

As the dictum about software development goes, “shipping code wins”. We have accepted this headcanon, but we realize that many ponies in the computer science community remain squicked by it.

As such, we have provided an overview of *fandomized algorithms*, *fandomness*, and *fandom variables*, and explored some of their applications in computing. In upcoming seasons, we expect that it will be revealed that fandom/CS is the OTP.

Acknowledgments

We would like to thank our beta readers.

References

- [1] Archive of Our Own. URL <https://archiveofourown.org/>.
- [2] Luis von Ahn or whatever.

¹The alert reader may have noticed that Tumblr is a platform for human computation [2], performing loopy headcanon propagation at scale. Most Tumblr traffic is used for applications in protein folding and computational geophysics.

²Google for “archive of our own”; do you not know how to do web searches?³

³Oh, fine. [1].

```
$ ./fandom_number_generator.py
No numbers in fanwork #346401
YOUR FANDOM NUMBER: 286
from fanwork #369546
http://archiveofourown.org/works/369546
```

Figure 1: Sampling a fandom number from AO3.