

## Computational Virologist Offers Lessons Learned from Influenza Evolution to Improve Web-Browsing Habits

"Currently, automated surveillance can only supplement, not replace, human intelligence - only a curated download repository can ensure the safety of free software."

An expert in the rapid evolution of parasitic programming offers advice on internet security and a curated repository of safe, free software downloads. A curated web site is managed by a living human being, as opposed to automated scripts; this added level of human intervention greatly enhances the security of a site's inventory.

To defeat the vast majority of malware, doctoral candidate Stephen Huff suggests two immediate changes to the average freeware-user's browsing habits. "First, you need a trusted source of downloads that won't trick you with bogus links for products that are neither safe nor free. Second, you need an expert to personally examine each product to make certain you're not shaking hands with a virtual Typhoid Mary. Automated scripts executing automated malware scans simply aren't good enough. The one thing I know about social or biological systems is that they can evolve rapidly - no matter how good a script may be today, it must necessarily be antiquated next month or next year. True security requires the intervention of a human mind to view the images, read the text, examine the malware reports and make an accurate determination of safety and suitability."



Stephen Huff, Computational Biologist, Frustrated Freeware User, and Curator of SafeFreeSoftware.com

Curated databases are common scientific research tools, but such carefully maintained repositories of information are less commonly found among freeware distributors. The site curator of SafeFreeSoftware.com provides these services by publishing a non-redundant repository of quality software downloads available in hundreds of sub-categories collected into convenient super-categories that include **security, games, audio, video, internet, business, office** and **programming** genres.

As a fifth-year doctoral candidate at the Bioinformatics Laboratory of the University of Houston, a Microsoft Certified Systems Engineer and former software consultant with more than a decade of experience, **Stephen Huff** is familiar with the myriad threats posed by viruses, both biological and binary. "I learned a great deal about biological viruses from their binary counterparts, and vice versa," says Huff, "but more importantly, I learned a great deal about their management, too. A crucial aspect of managing parasitic organisms, whether real or virtual, is inoculation, where vaccination is both possible and feasible."

A case in point in the realm of biological viruses is the disease caused by small pox virus, the same disease that devastated the Aztecs and countless other Native American societies. Since human beings provided the sole source of the small pox virus, a global vaccination campaign eventually succeeded in eliminating it completely. Its intentional, forced extinction ensured the extinction of the deadly disease it produced, too, and today, children are no longer inoculated against the small pox, because there is no threat of infection.

“Unfortunately,” says Huff, “binary malware is more similar to the influenza virus. Its hosts are diverse, including personal computers and a range of handheld devices that grow more powerful with each generation, and its ability to mutate is accelerated by extremely motivated malware authors who can generate millions of dollars in revenue with a single successful scrap of malicious code. We get a new influenza vaccine every year, and even then approximately 35,000 people die of the disease in the U.S., alone. The same thing happens with binary viruses, worms and other malware. Currently, there is no certain, automated defense... BUT, one human being can almost always determine when another human being is ill. It is this ability of personal perception that overcomes even the best artificial intelligence applications in making such a subjective diagnosis.”

The problem is not simply a failure of widespread anti-virus software installations. Most private and corporate networks are protected by some form of SPAM filter and highly capable antivirus application. In fact, one is more likely to encounter a virtual infection via an intentional, overt act than by any passive means. The popular website Wikipedia contains the following informative anecdote; “An Internet based experiment revealed that there were cases when people willingly pressed a particular button to download a virus. Security analyst Didier Stevens ran a half year advertising campaign on Google AdWords which said ‘Is your PC virus-free? Get it infected here!’ The result was 409 clicks.”