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Bayesian Filters

By Debbie Hamstead

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A common problem with filters is the fact that they are a one-size-fits all solution to SPAM. The rules are concrete and only change based on input from updates from the Anti-spam service.

SPAM changes too quickly to make that method effective. Additionally, what is SPAM to you may not be to someone else. That is where Bayesian filters come in.

They are very effective at eliminating SPAM and have very low false-positive rates for their users.

Bayesian filters are based on Bayesian logic, a branch of logic named for Thomas Bayes, an eighteenth century Mathematician.

This type of logic applies to decision making by determining the probability of a certain event based on the history of past events.

Using this as a model seemed a logical step for SPAM filtering. If you can predict what SPAM will look like now based on what it has looked like in the past, you are halfway to the solution.

To finish solving the problem, Bayesian filters were developed to be dynamic and continue to be effective as the SPAM changes.

Bayesian Filters

Bayesian filters are content based. They look for characteristics in each email that you receive and calculate the probability of it actually being SPAM.

These characteristics are generally words in the content and the header file information that each email contains. They can also include common SPAM HTML code, word pairs, phrases, and the location of a phrase in the body of the email.

Typical words in SPAM would be "Free" and "Win", while "humility" would probably not appear. The filter begins with a 50% neutral score for the email, and then adds points for SPAM

characteristics.

Likewise, deductions are made for non-SPAM characteristics present. The total score is calculated and then action is taken based on its likelihood of being SPAM.

The filter does not assume that all arriving email is bad, rather that all email is neutral and should be considered equally.

Bayesian filters are better than traditional content scoring filters in that they are trained by you to recognize your email.

A doctor, for example, might have many emails legitimately using the word "Viagra". A traditional content scoring filter would probably shoot that email to the SPAM folder, or delete it.

This would result in a high false-positive rate for the doctor, even if you don't want Viagra emails. The filter will build a list based on the doctors email use and corrections to incorrectly marked email.

The initial training period may be a little time consuming, but once complete offers a tailored solution to SPAM control for each user.

In addition to protecting the good email, the filter makes it difficult for Spammers to trick as every filter will have individual requirements.

That being said, Spammers do have a few weapons in their arsenal to attempt to circumvent Bayesian filters. The easiest would be to create SPAM that looks like an everyday letter.

This would remove their ability to use typical marketing techniques and so is not as likely with normal commercial email. For the purveyors of fraud, however, this would be easier.

Spammers could also so weight a message with a common good word, or distort the bad ones, that it becomes scored as neutral or lower and get through.

Once correctly marked as SPAM by you, though, the filter will adjust and not be fooled again. This automation and ability of the software to grow as you and SPAM change over time is key to the significance of these types of filters.

Widespread use of good Bayesian filters will not only eliminate SPAM on your end, but would reduce the practice of Spamming altogether. If they cannot get the mail through, they are just wasting their time.

Debbie Hamstead is the webmaster of <http://www.StompingOutSPAM.com> Offering a comprehensive Quick Start Guide to keeping SPAM outof your inbox. She also manages <http://www.nichesites4profit.com>

Bayesian Spam Filters Explained

By Niall Roche

In a word Bayesian spam filters are "intelligent". Bayesian spam filters are intelligent in so far as they're capable of comparing two sets of information and acting on the result. This is in direct contrast to the vast majority of other spam filters who use pre-built rules to decide which e-mail is spam and which is not.

Bayesian spam filters can take one group of legitimate e-mail and another group of spam and compare the values and data of each. The definition of legitimate e-mail that it creates at the end of this comparison session is what it uses going forward to scan your inbox for spam.

FYI Bayesian spam filters are named after Thomas Bayes an 18 century cleric who created something known as Bayes Theorem. In summary Bayes Theorem is as follows: .."in statistical inference to update estimates of the probability that different hypotheses are true, based on observations and a knowledge of how likely those observations are, given each hypothesis." In plain English it looks for obvious repeating patterns to form an "opinion" on something. In spam filter terms that "opinion"

Bayesian Filters

becomes a rule which keeps you spam free (or pretty close :-)

The really neat thing about Bayesian filters is that they're capable of learning. For example if they decided to block an e-mail because the filter perceived it as junk but the user marked it as valid mail the Bayesian filter then knows not to block that type of e-mail in the future. So, in time, this type of spam filter learns enough to block spam far more effectively. AOL have embraced this type of spam filter with the launch of AOL 9.0 and AOL Communicator- if the big dog wants it then it must be worthwhile?

So what Bayesian spam filtering options are available to you? Well quite a few to be honest and you'll be pleasantly surprised by some of the names involved :-) The first one on the list is AOL with their AOL Communicator product. The spam filtering features in AOL Communicator and AOL 9 are, to be honest, impressive. Think what you will of the provider themselves AOL Communicator is an excellent product and is suitable for use by both PC and Mac OSX users.

Next up we have Eudora. The nice folks at Qualcomm have designed an excellent e-mail client that also has built in Bayesian spam filtering. I've used Eudora in the past and it's a neat little package. Again the benefits here are advanced integrated spam filtering with your e-mail automatically. Mac OSX and OS9 users are in luck with Eudora providing support for both.

If you'd like to know more about spam filters or just spam in general please drop by our site at www.spam-site.com

Niall Roche is the content author and owner of

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