ALLERGY, PHILOSOPHY, SOFTWARE

KEEP SECRET

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There is a new Edge Special Event about the Hillis's question "WHO GETS TO KEEP SECRETS?"

The question of secrecy in the information age is clearly a deep social (and mathematical) problem, and well worth paying attention to.
When does my right to privacy trump your need for security?; Should a democratic government be allowed to practice secret diplomacy? Would we rather live in a world with guaranteed privacy or a world in which there are no secrets? If the answer is somewhere in between, how do we draw the line?

With all the wikileaks hype over the last year, the Edge essay is la perfect supplement to our last paper about anonymity in genetics – check out BMC Ethics "Caught you: Threats to confidentiality due to the public release of large-scale genetic data sets".
What we didn't mention in this paper are more complicated statistics like stochastic record linkage – more on that in RJournal 2/2010, p.61 ff

Stochastic record linkage

Theory

Stochastic record linkage relies on the assumption of conditional probabilities concerning comparison patterns. The probabilities of the random vector $\gamma = (\gamma_1,\ldots,\gamma_n)$ having value $\tilde{\gamma} = (\tilde{\gamma}_1,\ldots,\tilde{\gamma}_n)$ conditional on the match status Z are defined by

$$u_{\tilde{\gamma}} = P(\gamma = \tilde{\gamma} \mid Z = 0),\ m_{\tilde{\gamma}} = P(\gamma = \tilde{\gamma} \mid Z = 1),$$

where $Z = 0$ stands for a non-match and $Z = 1$ for a match. In the Fellegi-Sunter model these probabilities are used to compute weights of the form

$$w_{\tilde{\gamma}} = \log\left(\frac{P(\gamma = \tilde{\gamma} \mid Z = 1)}{P(\gamma = \tilde{\gamma} \mid Z = 0)}\right).$$

These weights are used in order to discern between matches and non-matches.