

Information Accountability

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Abstract:

Large scale data mining in both government and privacy sector applications has raised as yet unsolved problems of privacy, intellectual property and other controversial uses of information. Neither our legal system (privacy and intellectual property laws) nor information hiding technologies (secure private computation techniques) offer a means by which rich inferences can be gleaned from data without running afoul of social and legal norms. As an alternative, we are developing system architectures that provide Information Accountability. Accountable systems will assist users in seeking answers to questions such as: Is this piece of data allowed to be used for a given purpose? Is a string of inferences permissible for use in a given context, depending on the provenance of the data and the applicable rules? Information accountability will emerge from the development of three basic capabilities: policy-aware audit logging, a policy language framework, and accountability reasoning tools. A policy-aware transaction log will initially resemble traditional network and database transaction logs, but also include data provenance, annotations about how the information was used, and what rules are known to be associated with that information. Cryptographic techniques will play an important role in Policy Aware systems, but unlike the current reliance of privacy designs today, cryptography will be more for the purpose of creating immutable audit logs and providing verifiable data provenance information, than for confidentiality or access control.