The Impossibility of Keeping Secrets

Studer, T.*

Institute of Computer Science, University of Bern, Switzerland

E-mail: thomas.studer@inf.unibe.ch
*Corresponding author

Abstract

Controlled query evaluation (CQE) is an approach to guarantee data privacy for database and knowledge base systems. CQE-systems feature a censor function that may distort the answer to a query in order to hide sensitive information. We introduce a high-level formalization of controlled query evaluation in the language of modal logic. We then use this to define several desirable properties of CQE-systems. Finally we establish two impossibility theorems, which show that certain combinations of these properties cannot be obtained.

Keywords: no-go theorem; data privac; controlled query evaluation; modal logic.