Static and Dynamic Security in Web Data Management
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Goal:
In the original design of the Internet protocols, networks were assumed private, isolated and physically secure, or else completely public. With the growing use of the World Wide Web, especially in e-commerce, security over the web becomes one of the major problems. Our researches focus on how to prevent unauthorized users an access to information that they are not supposed to access.

Accomplishments:
Research on Static Security Approach
Static web views are determined using “user profile approach”. We investigated the problems of building user profiles, verifying the user information, protecting user’s privileges, generating different views according to the user profile, including its security level and special interest, authorizing the view under request, and updating user profile and the corresponding view.

Research on Dynamic Security Approach

• Mobile Agent Approach
  We investigated the problem of how to model user-interaction in a dynamic environment and how to provide access privileges automatically based on verification. We have developed an algorithm for new and old user authentication and providing secured views depending on the user profile.

• Authentication-Driven Authorization on Web Access
  We proposed an authentication-driven authorization approach, where authentication is integrated with authorization. The validity of a user is checked using authentication routines associated with the data object requested by the user. The access permission is achieved by authentication rather than by inheriting from group/role membership relation.

• Integrate Data Mining Technology into Web Security
  Data mining technology has been used as an efficient tool to discover interesting and useful patterns in large amount of data. We investigated the feasibility of integrating data mining techniques into web security.

We worked on two prototypes that were implemented using the dynamic security approaches.
• **Prototype A: A Smart User Modeling Agent**
  We designed the structure of the agent, which includes three parts: *User Modeling System, Information System* and *Smart Mapping System*. We have finished the *new user’s initial modeling system* and the “set dynamic questions” algorithm.

• **Prototype B: Authentication-Driven Authorization Execution Environment**
  We have finished a primitive implementation, which demonstrates the ideas of integrating authentication with authorization.

1. **Published Papers:**

2. **Technical Reports:**
   * User Content Mining Supporting Usage Content Mining for Web Personalization*, M. Mohou, B. Bhargava, and M. Mohania, CERIAS-TR-2001-21
   * Unauthorized Access Agent*, L. Chang and Liyun, TR-CS, 2001, UM-Rolla

