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Research Methodology

Research Papers & Review



UNIVERSITY
OF WOLLONGONG
AUSTRALIA

What is a research paper

- A writeup of your research results
- Written according to the theme of research
- Written according to the style of the journal or conference proceedings

Publication

- Submitted to a journal or a conference
- Review process
 - peer review (blind or unblind)
 - by the technical program committee
 - by an associate editor of a journal
- Revision or Rebuttal
- Publication

Structure of a paper

- | | |
|---|--------------|
| <ul style="list-style-type: none">• Title• Authors information (names, affiliation, contact, etc.)• Abstract• Keywords | Front matter |
| <ul style="list-style-type: none">• Introduction• Related work• Preliminaries | Background |
| <ul style="list-style-type: none">• Presentation of the method and the result• Analysis or discussion• Conclusion | Main body |
| <ul style="list-style-type: none">• References or bibliography | Reference |

Structure of a paper

- **Title**

- Should capture the research problem and solution
- Tell the reader the key content
- Use rightful keywords to capture the core of the paper

- **Example**

Efficient Data Integrity Checking for Remote Cloud Storage

[Pinocchio: Nearly practical verifiable computation](#)

[Hey Kimya, Is My Smart Speaker Spying on me?](#)

New primitives/ concept/ names

Structure of a paper

- **Abstract**
 - background,
 - research problem,
 - solution and
 - Significance
- **Keywords**
 - Most significant keywords to aid the journal or conference to find suitable reviewer
 - For readers to find suitable papers

Structure of a paper

Secure cloud storage is a promising tool to enhance collaboration. Admitting new users to access the uploaded data is an important requirement in enhancing collaborations. The main issue is with regards to the integrity protection during the process of extending the access policy. When a new access policy is added, the cloud has to be sure that the extended access policy remains guarding the same encrypted data as the original access policy, even though the cloud cannot decrypt this ciphertext, which is a challenging problem to solve. In this paper, we answer the above problem affirmatively by introducing an extendable access control system with Integrity Protection (EACSIP), which is suitable to enhance collaboration in the cloud. The construction of EACSIP is built on top of a novel cryptographic primitive, namely functional key encapsulation with equality testing. The security proof and the performance evaluation of EACSIP are provided in this paper.

Structure of a paper

- **Introduction**

- Background of research
- Motivation
- Research problem
- Current method or solution
- Why can not current method solve your problem
- Your proposed method
- Your result (contribution)
- The organisation of the paper

Structure of a paper

- **Related work**

- Select the papers which are most related to your work
- Read them (should have been done during literature review phase)
- Summarise their key contributions and results
- Comment on their pros and cons

Structure of a paper

- **Preliminaries**

- Preparation for description of your method
- Provide the notation or definitions of your method
 - e.g., provide the coding method you are going to use, the security notion of cloud computing, the typical approach of questionnaires, etc.

Structure of a paper

- **Presentation of the method and the result**
 - This is the main body of the paper
 - The method:
 - qualitative method
 - quantitative method
 - other scientific methods (mathematical)
 - The result
 - depends on the method and research

Structure of a paper

- **Analysis or discussion**
 - to convince readers the result is correct, sound and significant
 - based on simulation or experiment if necessary
 - comparison with other works

Structure of a paper

- **Conclusion**

- Highlight what you have done
- Briefly explain the significance of your research result
 - The problem you have solved
 - The result you have achieved
- Future work
- Open problem

Structure of a paper

- **References and citation**
 - References provide a list of papers cited in the paper,
 - Must cite the paper if it is related to the content, including your own paper.
 - Never put citation in the abstract.

Example of citation

B. Attribute-Based Access Control

ABE provides scalability and fine-grained access policy to enable access control mechanisms, which is mainly classified into two complementary forms, key-policy ABE [10] and ciphertext-policy ABE [11], [12]. Yu *et al.* [13] introduced KP-ABE into public cloud storage to conduct fine-grained data access control. Subsequently, some variants under single-authority have been proposed [14], [15]. To cater for a complex

- [10] N. Attrapadung, B. Libert, and E. de Panafieu, “Expressive key-policy attribute-based encryption with constant-size ciphertexts,” in *Public Key Cryptography (Lecture Notes in Computer Science)*, vol. 6571. Berlin, Germany: Springer-Verlag, 2011, pp. 90–108.
- [11] J. Bethencourt, A. Sahai, and B. Waters, “Ciphertext-policy attribute-based encryption,” in *Proc. IEEE Symp. Secur. Privacy (SP)*, Jul. 2007, pp. 321–334.
- [12] B. Waters, “Ciphertext-policy attribute-based encryption: An expressive, efficient, and provably secure realization,” in *Proc. 14th Int. Conf. Pract. Theory Public Key Cryptogr. (PKC)*, vol. 6571. Mar. 2011, pp. 53–70.
- [13] S. Yu, C. Wang, K. Ren, and W. Lou, “Achieving secure, scalable, and fine-grained data access control in cloud computing,” in *Proc. INFOCOM*, 2010, pp. 534–542.
- [14] J. Huang, C. Chiang, and I. Liao, “An efficient attribute-based encryption and access control scheme for cloud storage environment,” in *Grid and Pervasive Computing (Lecture Notes in Computer Science)*, vol. 7861. Berlin, Germany: Springer, 2013, pp. 453–463.
- [15] G. Wang, Q. Liu, and J. Wu, “Hierarchical attribute-based encryption for fine-grained access control in cloud storage services,” in *Proc. 17th ACM Conf. Comput. Commun. Secur. (CCS)*, 2010, pp. 735–737.

Submission

- **Online submission only**
 - Peer reviewed journal
 - Peer reviewed conference
- **Blind submission**
 - no author information provided in the paper
 - applied to most of conferences
- **Unblind submission**
 - provide detailed author information
 - applied to most of journals

Peer review

- Peer review is the evaluation of work by one or more people of similar competence to the producers of the work (peers).
- It constitutes a form of self-regulation by qualified members of a profession within the relevant field.
- Peer review methods are employed to maintain standards of quality, improve performance, and provide credibility.
- Scholarly peer review is often used to determine an academic paper's suitability for publication.

Revising a paper

- Often, you will be asked to revise your journal paper as part of peer review process
 - Address every (negative but constructive) comment
 - Modify your paper accordingly
 - Never blame the reviewer, even if comments are incorrect
 - If want to argue, use nice and polite words
 - Highlight the changes on your paper
- Resubmit the paper

Final submission and publication

- Once your paper is accepted for publication, you need to reformat your paper with the style of the journal or conference proceedings (if not done in the original submission)
- Submit your final paper with a signed copyright form



Types of publication

- **Paper-based publication**
 - Need to subscribe it in order to get a copy
- **Online publication**
 - Need to subscribe it in order to access the database
 - e.g. Springerlink, IEEE Explorer, ScienceDirect, etc.
- **Open source online publication**
 - Publication is chargeable
 - Open access

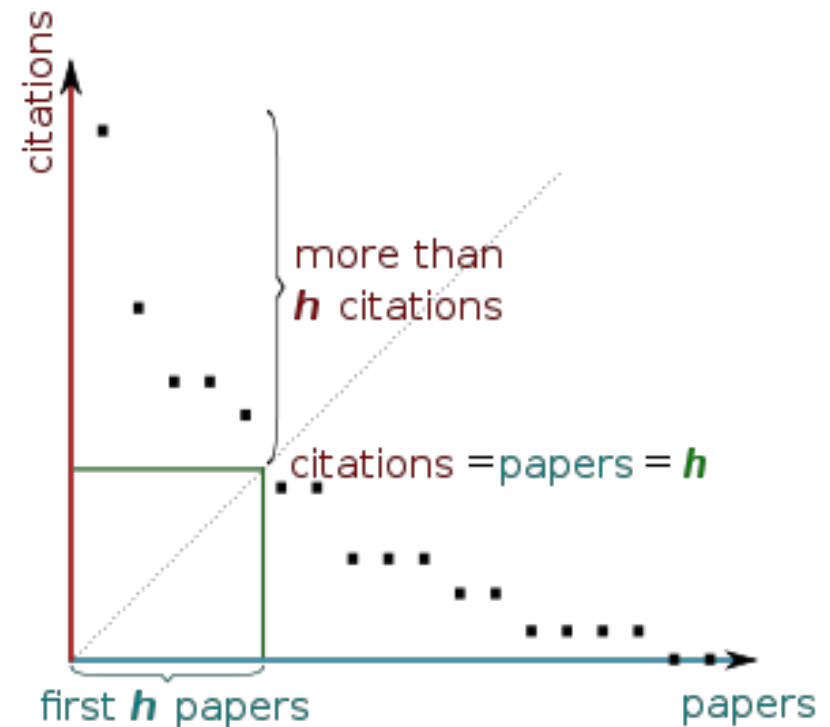


Impact factor and citations

- If your paper is good enough, you will be cited in other paper's literature review.
- Citations of a paper can assess the quality of a paper
- Citations
 - Citation count for an author: the number of citations of all papers published by an author
 - h-index

h-index (Herfindahl index)

- The h-index is an author-level metric that attempts to measure both the productivity and citation impact of the publications of a scientist or scholar
- The index is based on the set of the scientist's most cited papers and the number of citations that they have received in other publications.



wikipedia

<u>Citation indices</u>	
<u>Citations</u>	6297
<u>h-index</u>	40

Impact factor and citations

- **Journal Impact Factor (Web of Sciences)**
 - The journal Impact Factor is the average number of times articles from the journal published in the past two years have been cited in the journal citation reports (JCR) year.
- **5-Year Journal Impact Factor**
 - The 5-year journal Impact Factor is the average number of times articles from the journal published in the past five years have been cited in the JCR year. It is calculated by dividing the number of citations in the JCR year by the total number of articles published in the five previous years.