Efficient Filtering of XML Documents for Selective Dissemination of Information

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Discussion Presented by

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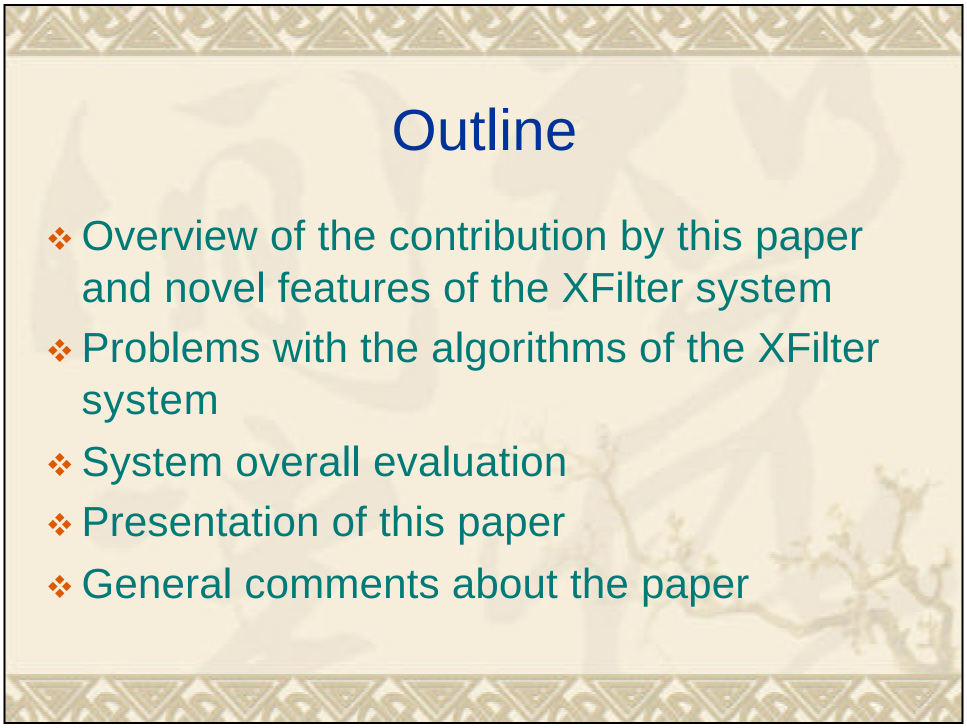
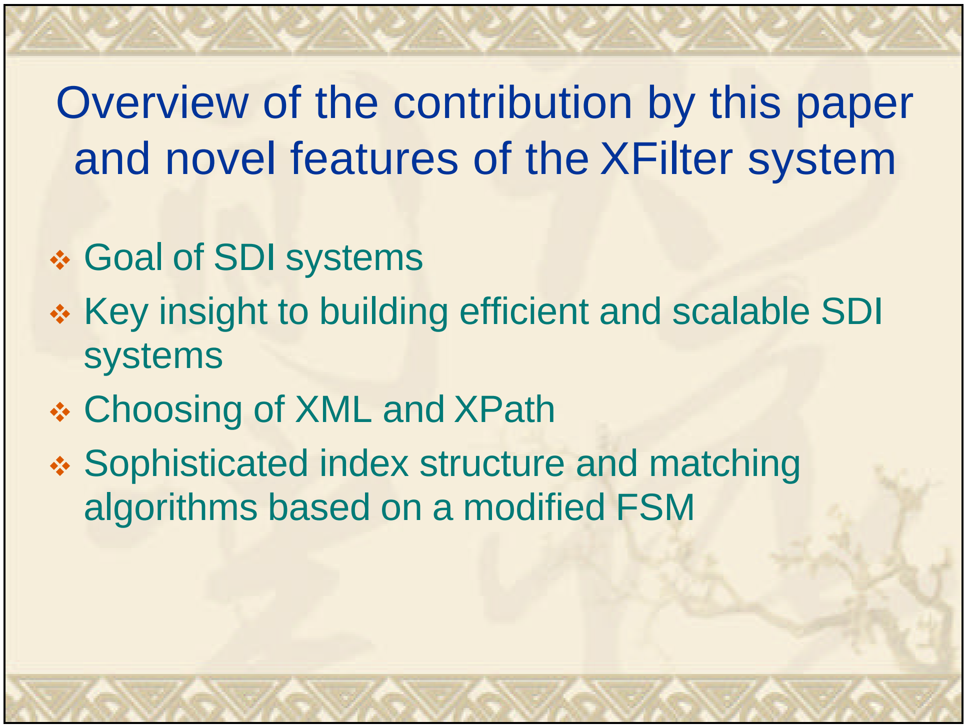


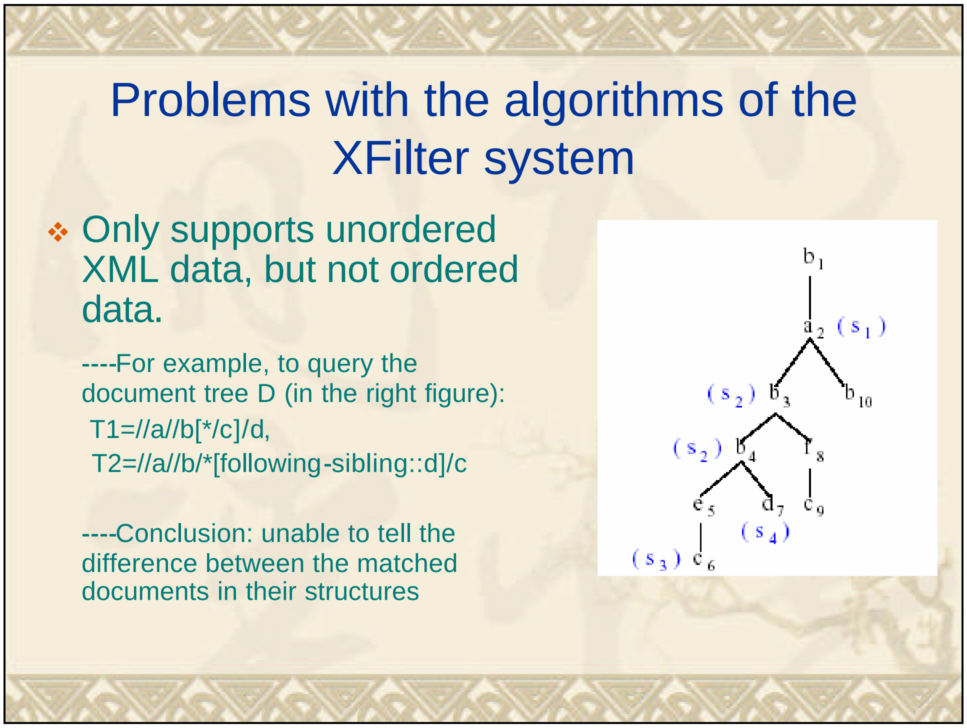
Outline

- Overview of the contribution by this paper and novel features of the XFilter system
- Problems with the algorithms of the XFilter system
- System overall evaluation
- Presentation of this paper
- General comments about the paper



Overview of the contribution by this paper and novel features of the XFilter system

- Goal of SDI systems
- Key insight to building efficient and scalable SDI systems
- Choosing of XML and XPath
- Sophisticated index structure and matching algorithms based on a modified FSM

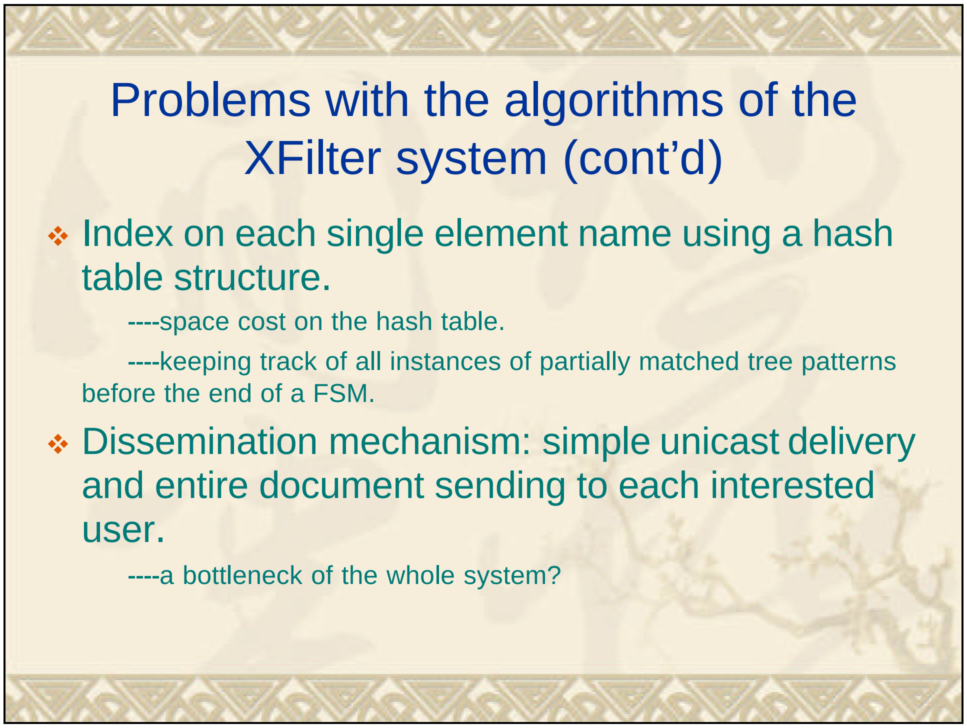


Problems with the algorithms of the XFilter system

- Only supports unordered XML data, but not ordered data.

  ----For example, to query the document tree D (in the right figure):
  T1=//a//b[*/c]/d,
  T2=//a/b/*[following-sibling::d]/c

  ----Conclusion: unable to tell the difference between the matched documents in their structures



Problems with the algorithms of the XFilter system (cont'd)

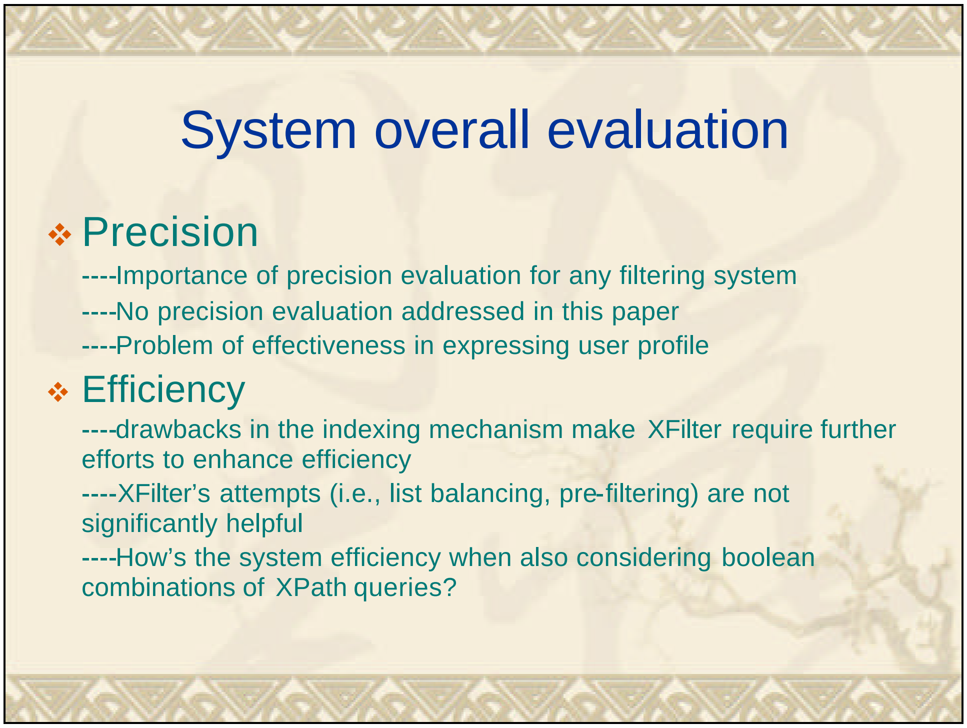
- Index on each single element name using a hash table structure.

  ----space cost on the hash table.

  ----keeping track of all instances of partially matched tree patterns before the end of a FSM.

- Dissemination mechanism: simple unicast delivery and entire document sending to each interested user.

  ----a bottleneck of the whole system?



System overall evaluation

- Precision

  ----Importance of precision evaluation for any filtering system

  ----No precision evaluation addressed in this paper

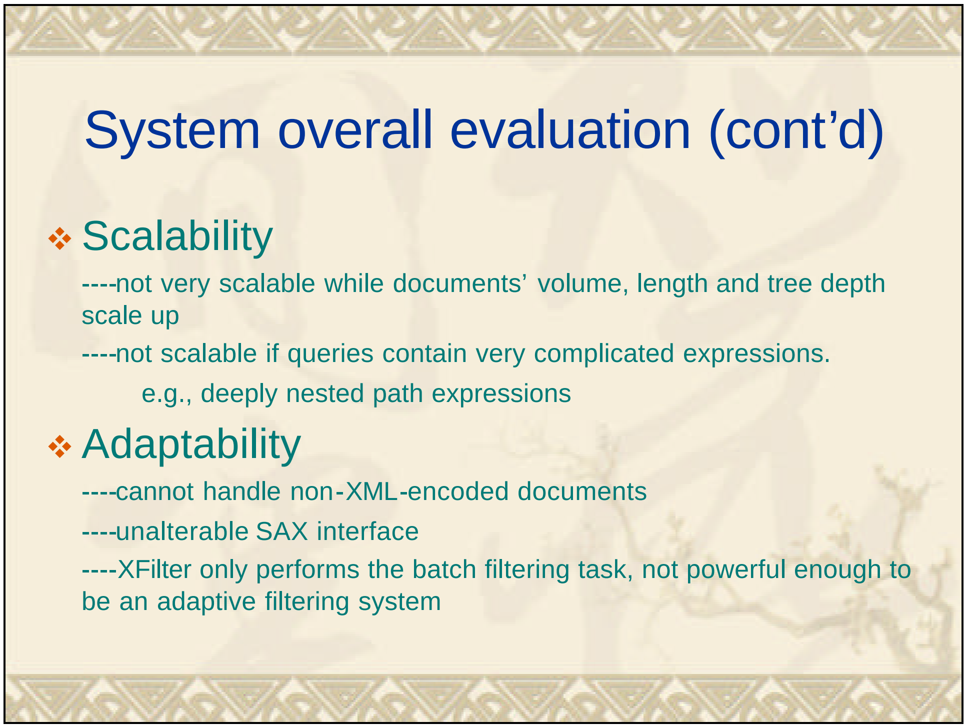
  ----Problem of effectiveness in expressing user profile

- Efficiency

  ----drawbacks in the indexing mechanism make XFilter require further efforts to enhance efficiency

  ----XFilter's attempts (i.e., list balancing, pre-filtering) are not significantly helpful

  ----How's the system efficiency when also considering boolean combinations of XPath queries?



System overall evaluation (cont’d)

- Scalability

  ----not very scalable while documents’ volume, length and tree depth scale up

  ----not scalable if queries contain very complicated expressions.

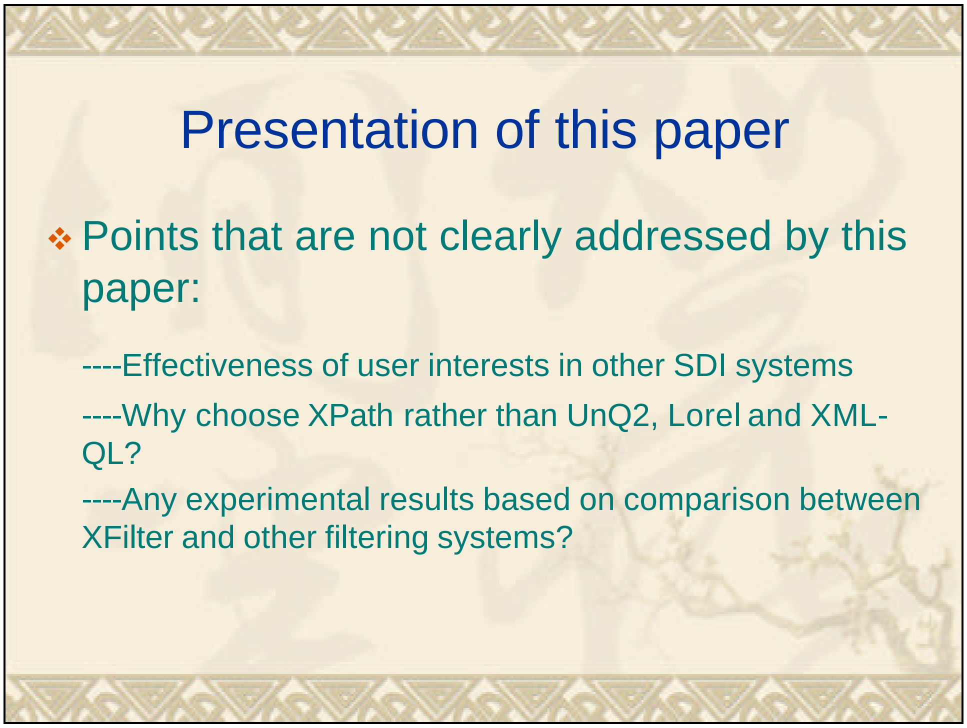
  e.g., deeply nested path expressions

- Adaptability

  ----cannot handle non-XML-encoded documents

  ----unalterable SAX interface

  ----XFilter only performs the batch filtering task, not powerful enough to be an adaptive filtering system



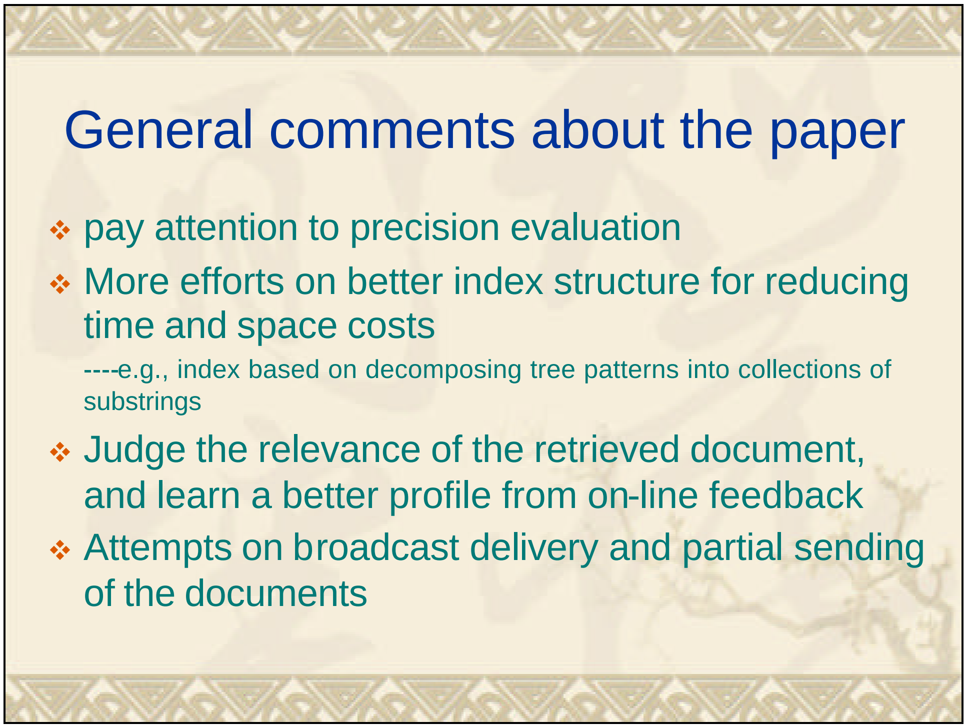
Presentation of this paper

- Points that are not clearly addressed by this paper:

  ----Effectiveness of user interests in other SDI systems

  ----Why choose XPath rather than UnQ2, Lorel and XML-QL?

  ----Any experimental results based on comparison between XFilter and other filtering systems?



General comments about the paper

- pay attention to precision evaluation
- More efforts on better index structure for reducing time and space costs

  ----e.g., index based on decomposing tree patterns into collections of substrings
- Judge the relevance of the retrieved document, and learn a better profile from on-line feedback
- Attempts on broadcast delivery and partial sending of the documents

Open time for discussion…