Quality-Driven Query Answering for Integrated Information Systems



Contents

Part I. Querying the Web

| 1 | Inti | roduction | |
|----|--------|--|----|
| | 1.1 | Centralized Databases Vs. the World Wide Web | 4 |
| | 1.2 | Information Quality on the Web | 5 |
| | 1.3 | Problem Definition | |
| | 1.4 | Thesis Outline | |
| 2 | Inte | egrating Autonomous Information Sources | 11 |
| | 2.1 | The Mediator-Wrapper Architecture | 12 |
| | 2.2 | The Universal Relation | 12 |
| | 2.3 | Information Overlap | 19 |
| | 2.4 | Applications | |
| | 2.5 | Related Work | 23 |
| | 2.6 | Summary | 25 |
| Pa | rt II. | . Information Quality | |
| 3 | Info | ormation Quality Criteria | 29 |
| | 3.1 | Information Quality Criteria for the Web. | 30 |
| | 3.2 | Information Quality Assessment | 39 |
| | 3.3 | Summary | 50 |
| 4 | Qua | ality Ranking Methods | 51 |
| | 4.1 | Quality Model | |
| | 4.2 | Scaling Methods | 52 |
| | 4.3 | User Weighting. | 55 |
| | 4.4 | Ranking Methods | 56 |
| | 4.5 | Comparison and Evaluation | 62 |
| | 46 | Summary | 66 |

Part III. Quality-Driven Query Answering

| 5 | Qui 5.1 5.2 5.3 5.4 5.5 | Ality-Driven Query Planning Logical Query Planning. Attaching Quality Reasoning to Query Planning. Integrating Quality Reasoning and Query Planning. Related Work. Summary. | 69 75 79 86 |
|----|--|--|----------------------|
| 6 | Query Planning Revisited | | |
| | 6.1 | Shortcomings of Conventional Query Planning | |
| | 6.2 | Merge Operators. | |
| | 6.3 | Revised Logical Query Planning | |
| | 6.4 | Related Work | |
| | 6.5 | Summary | 99 |
| 7 | Cor | mpleteness of Data | 101 |
| | 7.1 | A Completeness Measure for Sources. | 102 |
| | 7.2 | A Completeness Measure for Plans | 106 |
| | 7.3 | Properties of the Measures | 114 |
| | 7.4 | Other Overlap Situations | |
| | 7.5 | Related Work | |
| | 7.6 | Summary | 121 |
| 8 | Co | mpleteness-Driven Query Optimization | 123 |
| | 8.1 | Completeness Maximization | |
| | 8.2 | Maximizing Coverage. | |
| | 8.3 | Maximizing Completeness. | |
| | 8.4 | Algebraic Reordering | 147 |
| | 8.5 | Summary | 148 |
| Pa | rt IV | 7. Discussion | |
| 9 | Coı | nclusion | 153 |
| | 9.1 | Summary | |
| | 9.2 | Further Applications for IQ-reasoning | |
| | 9.3 | An Appeal. | |
| Re | feren | nces | 159 |